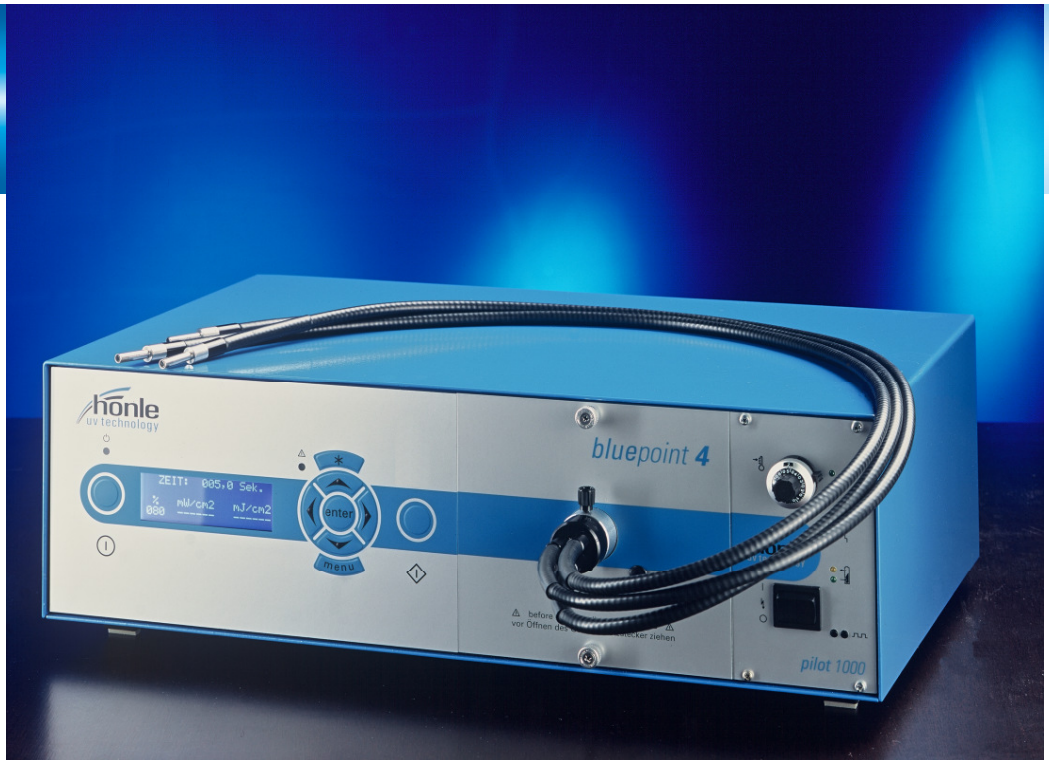

Operating Manual

bluepoint **4**
bluepoint **4 ds**
bluepoint **4 UVC**

32014e

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82166 Gräfelfing / München

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Layout: Dr. Hönle AG

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1 Introduction

This user's manual introduces you to the bluepoint 4, explains how to operate it and the range of possible applications.
It contains safety information and information on danger points to ensure safe and correct operation of the bluepoint 4.

The following terms and symbols are used in this manual:

Danger
This symbol indicates **immediate danger** threatening the life and health of personnel!

Warning
This symbol indicates **possible danger** threatening the life and health of personnel.

Caution
This symbol indicates a **potentially dangerous** situation.

Note
This symbol indicates notes, tips for application and other useful information.

2 Description

The Sujet is a high-intensity ultra-violet spot lamp for exposing small objects to very high-intensity radiation.

The Sujet consists of an operating unit with a UV lamp and a light guide.

The use of a flexible light guide means that the radiation is routed to the object to be exposed practically without loss.

Transmitting the radiation via light guide means that the equipment is suitable for applications at points where access is difficult.

A built-in time switch allows you to set a precise and constantly reproducible radiation dose and to operate an (optional) dosage valve.

Areas of application

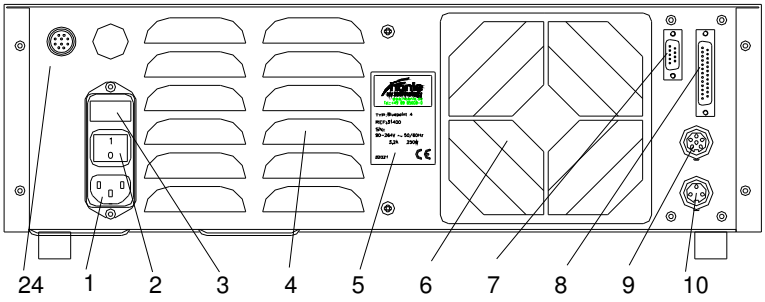
Areas of application

The bluepoint 4 is used in laboratories, in manufacturing and repair processes for the following applications:

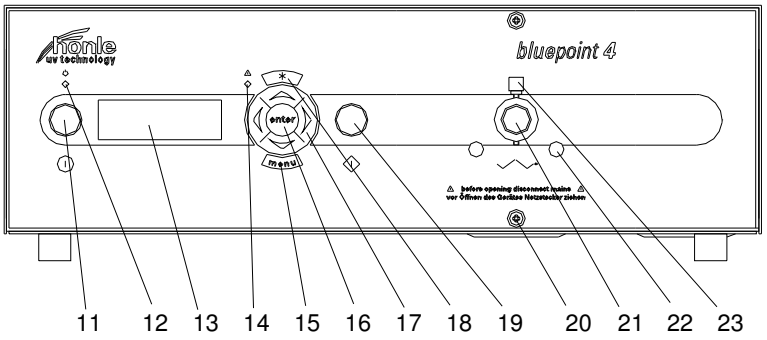
- Rapid precision hardening of UV adhesives and plastics
- Bonding and casting electrical and electronic components
- Bonding glass, metal and plastics
- High-intensity radiation for the chemical, biological and pharmaceutical industry
- Bonding glass fibres.

Individual parts and operating elements

Individual parts and operating elements



bluepoint 4, rear view



bluepoint 4, front view

1	Mains socket IEC	13	Display
2	Main switch	14	Status-LED
3	Fuses (2 x 4Amp inert)	15	Menu key
4	Ventilation apertures, waste air	16	Enter key
5	Rating plate	17	Arrow keys (Cursor)
6	Air filter (intake aperture, fan)	18	Asterisk key
7	RS 232 – interface SUB-D 9	19	Shutter switch
8	PLC-interface SUB-D 25	20	Screw connection, slide-in lamp unit
9	6-pin socket, foot-operated switch	21	Socket for light guide
10	3-pin socket alternating contact	22	Lamp adjuster
11	Switch “Lamp on/off“	23	Setscrew, light guide
12	Stand-By LED	24	Socket, dosage valve (optional)

3 Safety instructions

General information

General information

A sound knowledge of all basic safety regulations is essential to ensure safe and fault-free operation of the Sujet.
This user's manual contains all important safety regulations to ensure safe operation of the equipment.
This user's manual, and in particular the safety instructions, must be observed by all persons working with the equipment.

In addition, all relevant rules and accident prevention regulations relating to the operation site must be observed.
At regular intervals, the operator will check that all personnel are observing the safety regulations.

Under the **Health and Safety Management at Work Regulations 1999**, users are required to carry out a suitable and sufficient assessment of the risks created by the use of the bluepoint 4. They must ensure adequate control measures are in place to minimise or eliminate any of the risks created. The information contained within this operating manual will assist in creating your own risk assessment.

Staff obligation

Staff obligation

Before commencing work, all persons working with the bluepoint 4 undertake the following:

- to observe the safety at work and accident prevention regulations.
- to read the chapter on safety and the warnings printed in this manual and to observe them at all times while using the equipment.

Danger when using the equipment

Danger when using the equipment

The bluepoint 4 has been manufactured in accordance with the very latest state-of-the-art technology and the recognized rules of safety technology.

The equipment is to be operated only under the following conditions:

- Personal Protective Equipment (PPE) is worn to protect eyes and skin.
- for the purpose for which it was constructed
- in a condition in which it complies with all the requirements of safety technology.

Danger
In the event of improper use, there is a danger to the health of the user or third parties (serious skin or eye damage)!

In such a case, there may also be damage to the equipment or other material damage.

Note
This sign appears next to information on faults that may represent safety hazards.

Appropriate use

Appropriate use

The Sujet is a high-intensity ultra-violet spot-lamp (UV) for exposing small surfaces to radiation.
Any other use or use above and beyond these terms is defined as inappropriate and thus dangerous.
Any other use or use above and beyond these terms is defined as inappropriate and thus dangerous.
The bluepoint 4 must not be used for tanning the skin. The high intensity UV would cause burning and may lead to premature skin ageing or skin cancer.
The operator may only operate the equipment if all the operating instructions in this manual are observed.
The operator is under obligation to ensure that the prescribed inspection, cleaning and servicing work is carried out and that worn parts are always replaced immediately as indicated.

There are International and UK guidelines for restriction of occupational UV exposures.
Useful references:
ICNIRP Guidelines on limiting exposure (www.icnirp.de)
NRPB Advice on protection (www.nrpb.org)

The following are also regarded as necessary for appropriate use of the equipment:

- the observance of all notes in this user's manual
- the execution of all prescribed inspection, maintenance and servicing work
- the observance of the general and specific safety instructions in this user's manual
- compliance with the relevant accident prevention regulations.

Note
The Dr. Hönle AG is not liable for damage resulting from inappropriate use of the equipment.

Warranty and liability

Warranty and liability

The "General sales and delivery conditions" of the Dr. Hönle AG apply. The operator will have received these terms, at the latest upon the closing of the contract. The Dr. Hönle AG is not liable for any damage to persons or property arising from any one or more of the following:

- inappropriate use of the Sujet
- incorrect assembly, commissioning, operation and servicing of the Sujet
- operation of the Sujet with faulty and/or non-functioning safety devices or protective devices
- non-observance of the instructions given in the user's manual with reference to the safety, transport, storage, assembly, commissioning, operation, servicing and maintenance of the device,
- unauthorized alterations to the construction of the Sujet,
- negligent monitoring of equipment parts subject to wear,
- repairs which are carried out incorrectly
- catastrophes, the action of foreign bodies or acts of God.

4 Safety instructions

Organizational measures

Organizational measures

All safety devices on the equipment must be tested for correct functioning each time prior to carrying out any work and also at each shift change. Look for external signs of damage and check that the safety devices are fully functional.

Informal safety measures

Informal safety measures

In addition to this user's manual, the generally and locally applicable accident prevention and environmental protection regulations must be made available and observed.

Danger caused by electricity

Danger caused by electricity

The electrical equipment of the Sujet must be inspected regularly.

The following must be inspected before commencing work:

- check all equipment components for external signs of damage

  Loose connections must be tightened and damaged cables replaced immediately.

- check that all electrical cables are in perfect working order.

Danger
There is danger caused by direct or indirect contact with electricity!

Thermal hazards

Thermal hazards

The following precautions must be taken when operating the bluepoint 4:

- Never touch the end of the light guide.

Danger
High-intensity, bundled radiation is emitted from the end of the light guide. There is acute danger of ignition and burns!

- When working within the radiation field, always wear protective clothing and UV goggles.
- The end of the light guide must be kept at least 1m away from flammable objects.
- **Do not operate the UV lamp in explosion-protected areas.**

Danger
Due to the high temperature of the UV lamp (1000 °C), use of the equipment in explosion-protected areas is forbidden. Acute danger of explosion!

- The equipment must never under any circumstances be operated in the vicinity of flammable or explosive substances, gases or liquids. There is acute danger of fire and explosion due to the high intensity radiation emitted by the equipment and the high lamp temperature.
  The lamp may still be hot enough to start a fire or trigger an explosion even several minutes after it has been switched off.
- Allow the equipment to cool sufficiently before opening it to replace the lamp or for other servicing work. The bluepoint 4 requires a cooling-off period of at least 10 minutes with the fan switched on.
  If the equipment is left to cool without the fan (at an ambient temperature of 20 °C) a period of at least 30 minutes is required.

Danger
Acute danger of burns due to the high temperature of the UV lamp!

Danger caused by radiation

In addition to UVA radiation, the radiation source of the bluepoint 4 also emits short-wave UV radiation (UVC and UVB).

Danger
Never look directly into the light guide. Danger of blinding!
If not handled correctly, UV radiation can cause damage to the skin and eyes. It can cause severe sunburn, inflammation of the retina and conjunctiva.

Follow these instructions when operating the equipment:

- **Personal Protective Equipment must be worn to protect eyes and skin.**
- Protective goggles for the eyes should be to standard BS EN 170 especially Ultra-violet Filter Scale No 2-1.2 maximum spectral transmittance (313nm) 0.0003% (365nm) 0.3% model type should be for direct and peripheral exposure (side shielding).
- Gloves to protect hands should have a Clothing Protection Factor (CPF) of 30+ this is equivalent to the sun protection factor quoted for sunscreens. Marigold® Industrial have several blue nitrile glove types that score “very high” 30+ on the CPF index.
- Never look directly into the light guide.
- Always set up the lamp in such a way that no-one is exposed to direct radiation. Shielding can be created using UV absorbing plastics or metals.

Caution
UV radiation can cause material damage to electronic components. When using EPROMS in the vicinity of the bluepoint 4, protect them against UV radiation.

Caution
UV radiation causes materials to age prematurely. Protect UV-sensitive objects and surfaces against radiation.

Note
Protective articles are listed in the chapter "Order data for equipment, spare parts and accessories", page 82.

Danger caused by gases

Danger caused by gases

Some materials under certain conditions can release fumes when irradiated with the bluepoint 4.

- Observe the safety data sheets for the materials to be exposed to radiation.
- Assess the risks created by work involving such substances and establish measures to meet control regulations.
- Refer to the **Control of Substances Hazardous to Health Regulations 1999 (COSHH)**
- Where necessary, wear a breathing mask and ensure that the area is adequately ventilated and the vapours extracted.
- Before starting operation, test the air in the workroom. If the contamination of the air is too high, a ventilation and extraction unit must be installed.
- Commonly used UV curing adhesives do not release fumes with exposure to bluepoint 4.
- UV radiation increases the production of ozone. Adequate ventilation is therefore necessary.

Danger
The lamp contains mercury!
Mercury vapour will be emitted if the lamp breaks while it is hot or during operation.
In such an event, personnel must leave the room immediately and the room must be adequately ventilated.
Subsequently, a competent person must collect the mercury residue using a suitable binding agent and dispose of appropriately.
Binding agent: Powdered copper or zinc or Protectasan
Firma Frankenbach,
D-61462 Königstein / Taunus
Tel.: ++49 (0)6174 / 3993

Servicing, maintenance and remedying faults

Servicing, maintenance and remedying faults

All necessary maintenance work is described in chapter "Servicing, maintenance and cleaning", page 71. These tasks are necessary to ensure fault-free operation.
In the event of a fault in the operation of the bluepoint 4, chapter "Faults", page 85 offers information on the causes of faults and advice on how to remedy them.
In the unlikely event of a fault occurring which cannot be remedied with the help of the fault list, contact the customer service department of the Dr. Hönle AG.
Any components that are not in perfect condition must be replaced immediately.
Only use original spare and wear parts. Other parts may not be adequate for the application or constructed to the same high safety standards.

No changes may be made to the Sujet, no fittings may be added or conversions carried out without obtaining the prior permission of the Dr. Hönle AG.
Contact address for claims under warranty, repair and spare parts service:

Dr. Hönle AG
UV-Technologie
Lochhamer Schlag 1
D-82166 Gräfelfing / München

Tel.: +49 (0)89 / 856 08-0
Fax: +49 (0)89 / 856 08-148
E-mail: uv@hoenle.com
WebSite: www.hoenle.de

Warning
No repairs or changes may be made to the equipment other than those listed in this user's manual.

5 Transport, storage, delivery

Delivery volume of the bluepoint 4:

Delivery volume of the bluepoint 4

- bluepoint 4 unit
- Mains cable
- RS232-cable SUB-D, 9-pin
- Adapter SUB-D, 9-pin
- UV goggles
- Hexagon tool 2.5
- User's manual
- UV lamp
- 3-pin plug
- Light guide (optional) depending on order

Check that all parts have been delivered and that they are in good order.
Document any damage at once and report it immediately to your dealer or contact the Dr. Hönle AG directly.

Lamp
The lamp must be removed for dispatch and stored in its transport packaging! Use the original packing!

Note
Dispose of any packaging material in an environment-friendly manner or re-use it! We would particularly recommend you to keep the packing material if you intend to mail the device or otherwise transport it.

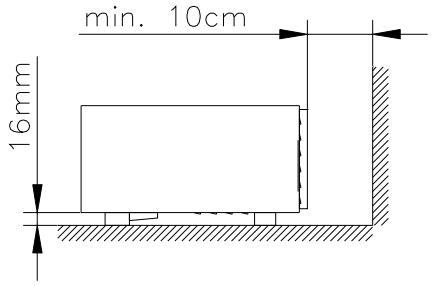
6 Commissioning, operation and readiness for operation

General information

General information

- Ensure that the Sujet is horizontal during operation.
- Do not set the unit up with its back directly against a wall or any other object. The unit must be placed with a gap of at least 10 cm between it and walls/other objects. The gap the equipment feet create between the surface on which the equipment is placed and the bottom of the equipment must be maintained. Warm outgoing air is emitted from the floor and the back of the unit. Adequate ventilation must be provided.
- Ambient temperature max. 35 °C
- Never fold or squash the flexible light guide. It should never be bent to a diameter of less than 25 cm.
- Do not remove the cap on the notched end of the light guide until immediately before connecting it up to the bluepoint 4.
- Keep the cap in a safe place and refit it after disconnecting the light guide from the equipment.
- Do not remove the cap on the radiation output end of the light guide until immediately before commencing work.
- Keep the cap and refit it after completing work.

  Before switching on, check that the ventilation apertures are unobstructed and free of foreign bodies.



Danger
When installing the bluepoint 4, ensure sufficient cooling. If the cooling is not adequate, there is acute danger of fire!

Neither the ambient temperature nor the cooling air temperature may exceed 35 °C.

- Shield the equipment from chemical vapours.
- Only operate the bluepoint 4 in dry rooms. Max. rel. air humidity 70%.

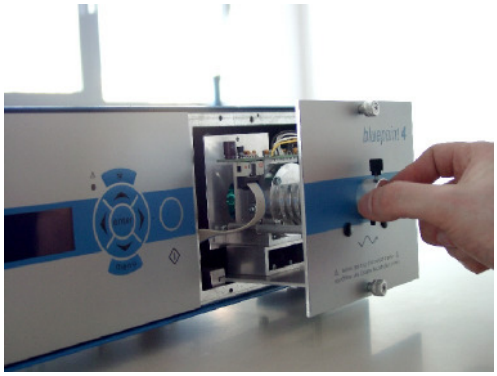
Note
For a description of PLC at PLC interface SUB-D 25 (8), see chapter “PLC mode“, page 60.

For a description of RS 232 at RS232 interface SUB-D 9 (7), see chapter 8 “RS232 interface“, page 64.

Fitting lamps at version bluepoint 4 and bluepoint 4 ds

Fitting lamps at bluepoint 4 and bluepoint 4 ds

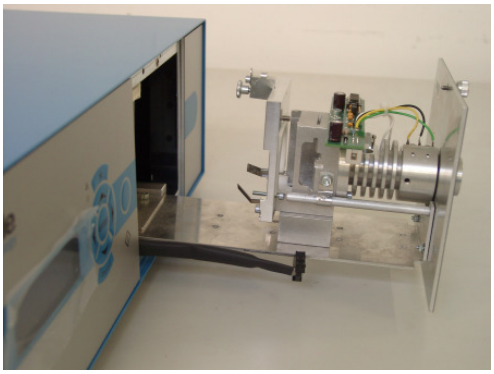
Warning
Disconnect the mains plug before opening the slide-in lamp unit!



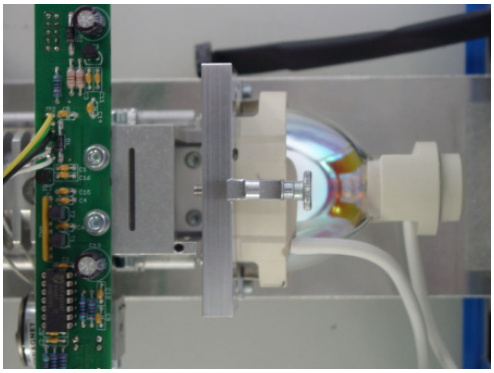
- Undo the screw connection of the slide-in lamp unit (20).
- Slowly pull out slide-in lamp unit approx. 9 cm.

Note
The optical filters and shutters available as accessories can now be fitted in. (For a description: see chapter ”Optical filters (Accessories)“, page 23 und chapter “Shutters (Accessories)“, page 25).

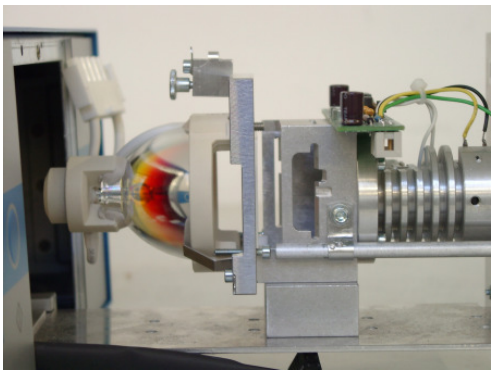
- Detach ribbon cable.



- Slide lamp unit out fully.
- Undo knurled screw.
- Turn lamp clip upwards 180°, engage and secure it with the knurled screw.



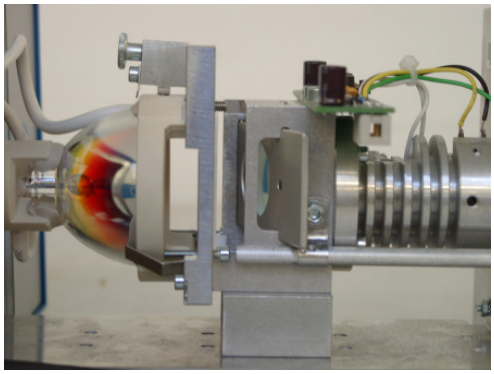
- Fit the lamp from above as shown.



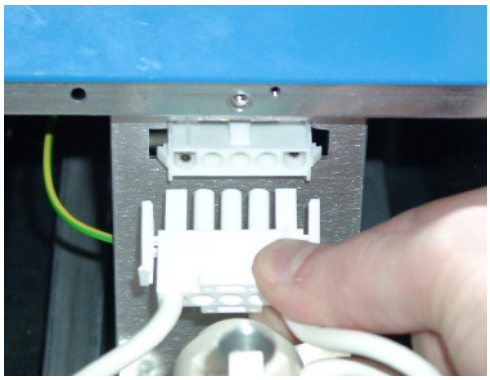
- Side view on lamp.

Caution

- The upper positioning screw fits into the upper slot of the lamp socket
- The reflector collar must rest on the 2 adjusting screws at the bottom.

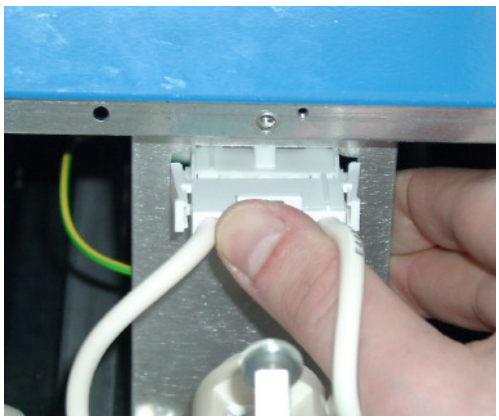


- Turn lamp clip 180°, engage it and secure with the knurled screw.



- Insert 5-pole lamp plug until the side sections engage.

Note
The plug can only be inserted with the flat contact sides (see outside contacts) pointing upwards.

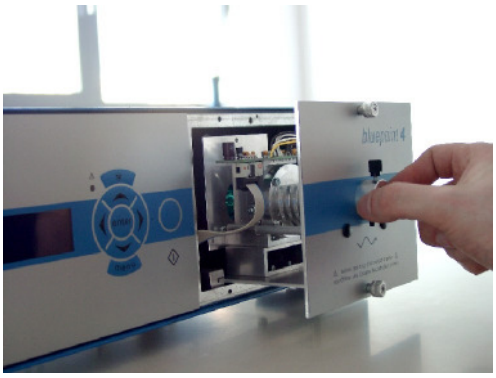


- Slide lamp unit in until it is extended approx. 9 cm.
- Plug in ribbon cable.
- Slide lamp unit in fully.
- Fully tighten the screw connection of the lamp unit (20) by hand.

Fitting lamps at bluepoint 4 UVC

Fitting lamps at version bluepoint 4 UVC

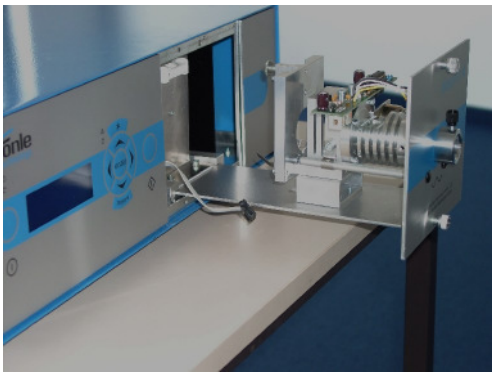
Warning
Disconnect the mains plug before opening the slide-in lamp unit!



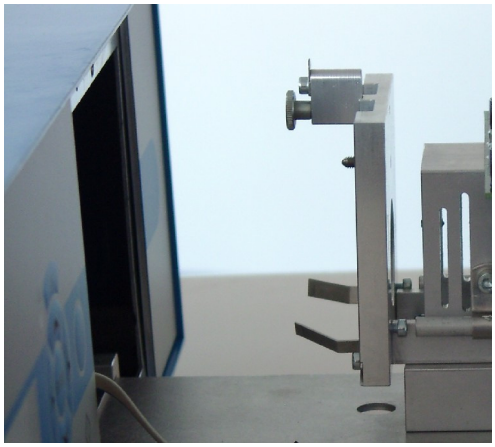
- Undo the screw connection of the slide-in lamp unit (20).
- Slowly pull out slide-in lamp unit approx. 9 cm.

Note
The optical filters and shutters available as accessories can now be fitted in. (For a description: see chapter ”Optical filters (Accessories)“, page 23 und chapter “Shutters (Accessories)“, page 25).

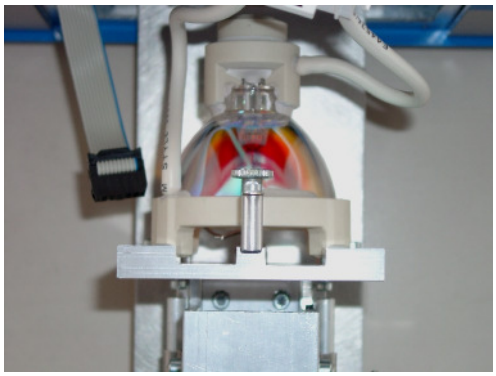
- Detach ribbon cable.



- Slide lamp unit out fully.
- Undo knurled screw.



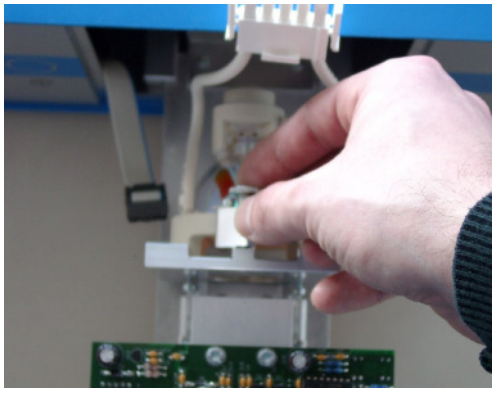
- Turn lamp clip upwards 180°, engage and secure it with the knurled screw.



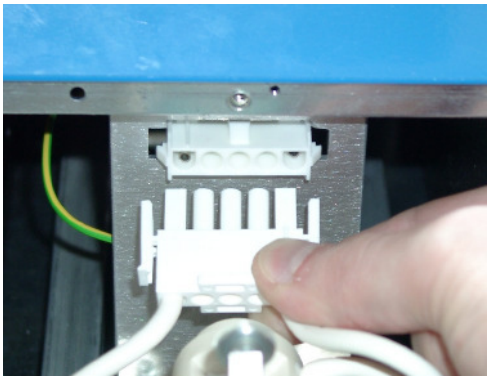
- Fit the lamp from above as shown.

Caution

- The section in the reflector collar must correspond to the section in the lamp socket
- The reflector collar must rest on the 2 adjusting screws at the bottom.

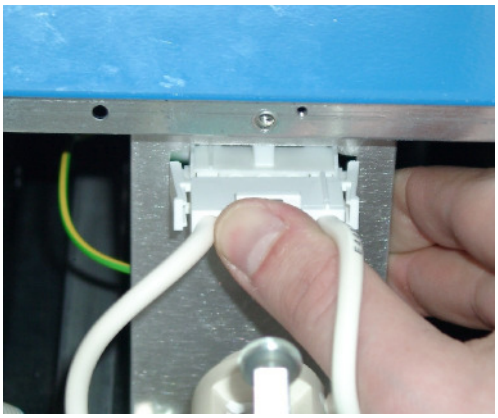


- Turn lamp clip 180°, engage it and secure with the knurled screw.



- Insert 5-pole lamp plug until the side sections engage.

Note
The plug can only be inserted with the flat contact sides (see outside contacts) pointing upwards.



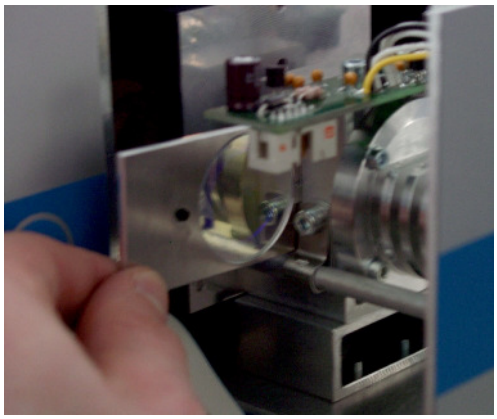
- Slide lamp unit in until it is extended approx. 9 cm.
- Plug in ribbon cable.
- Slide lamp unit in fully.
- Fully tighten the screw connection of the lamp unit (20) by hand.

Optical filters (Accessories)

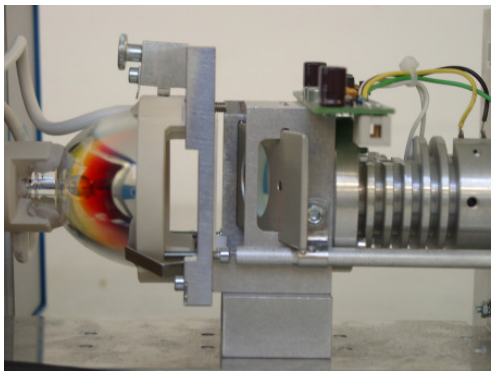
To reduce the thermal load on the objects to be exposed to radiation, we recommend that you fit optical filters, which are available as accessories of the bluepoint 4.
The following filters can be supplied:

Article No.	Description	Radiation permeability range
32203	Filter BP4 320-500nm compl.	320 – 500 nm (UVA + short-wave visible radiation)
32204	Filter BP4 320-390nm compl.	320 – 390 nm (UVA radiation)
32205	Filter BP4 390-500nm compl.	390 – 500 nm (short-wave visible radiation)

Fitting a filter at version bluepoint 4 and bluepoint 4 ds

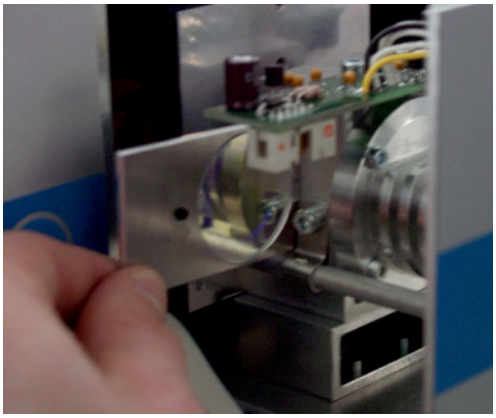


- Slide lamp unit out approx. 9 cm.
- Fully insert filter aslant into filter holder from the left.
- The labelling on the filter (e.g. 320-500 nm) must point forwards.

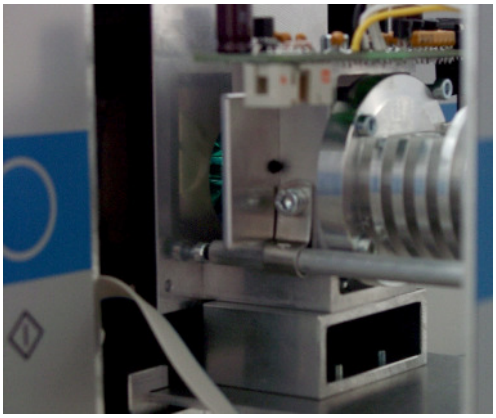


- Slide lamp unit in fully again.
- Fully tighten the screw connection of the lamp unit (20) by hand.

Fitting a filter at version bluepoint 4 UVC



- Slide lamp unit out approx. 9 cm.
- Fully insert filter into filter holder (large slit at the front) from the left.
- The labelling on the filter (e.g. 320-500 nm) must point forwards.



- Slide lamp unit in fully again.
- Fully tighten the screw connection of the lamp unit (20) by hand.

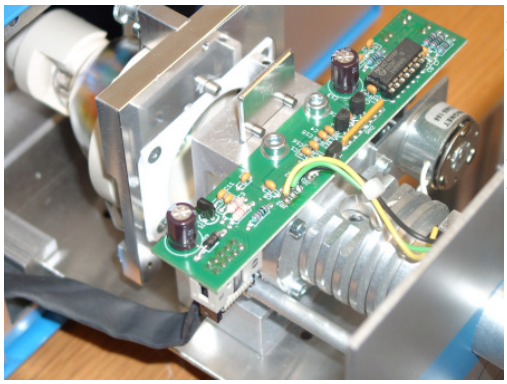
Shutters (Accessories)

The optional shutters available as accessories provide a further means of reducing the radiation intensity, in addition to the electronic control (60 – 100 % of the nominal power).
The bluepoint 4 shutter set consists of three shutters. (Article-No. 36965, see chapter “Order data for equipment, spare parts and accessories“, page 82.)

The intensity can be reduced as follows:

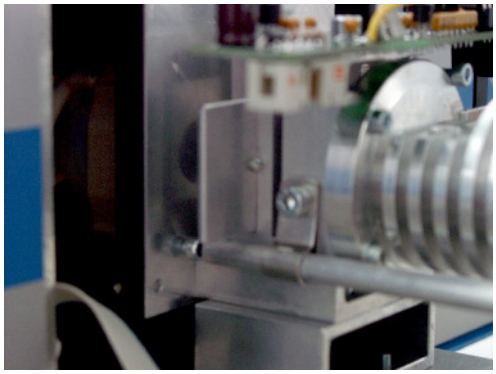
Shutter	Nominal value of radiation intensity
without shutter	approx. 6000 – 10000 mW/cm²
75 %	approx. 4500 – 7500 mW/cm²
50 %	approx. 3000 – 5000 mW/cm²
25 %	approx. 1500 – 2500 mW/cm²
Nominal value between 320 – 390 nm as measured with Hönle UV-Meter directly at the light outlet of a light guide (Ø8mm length 1m).	

Fitting shutters at version bluepoint 4 and bluepoint 4 ds



- Slide lamp unit out approx. 9 cm.
- Fully insert shutter in shutter holder from above.
  The labelling on the shutter
  (e. g. 75 %) must point forwards.
- Slide lamp unit in fully again.
- Fully tighten the screw connection of the lamp unit (20) by hand.

Fitting shutters at version bluepoint 4 UVC



- Slide lamp unit out approx. 9 cm.
- Fully insert shutter in shutter holder (small slit at the back) from the left.
  The labelling on the shutter
  (e. g. 75 %) must point forwards.
- Slide lamp unit in fully again.
- Fully tighten the screw connection of the lamp unit (20) by hand.

Electrical connection

Electrical connection

Danger
The device may only be connected up to correctly installed and earthed sockets.

- Plug the mains cable provided into the equipment's mains socket (1).
- Connect mains cable to earthed socket.

Note

Mains:	90	–264	Volt
	47	–60	Hz
Load rating:	min.	4	Ampere

Connecting up a foot-operated switch (Accessories)

Connecting up a foot-operated switch (Accessories)

Note
If you wish to operate the equipment with a foot-operated switch, we recommend that you use the foot-operated switch especially developed for the bluepoint. It is available as an accessory. (Art. No. 1866, see chapter "Order data for equipment, spare parts and accessories", page 82.)

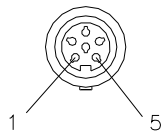
- Connect foot-operated switch to 6-pin socket (9).
- Tighten the screw connection.

Note
The shutter can only be opened after the warming-up period has elapsed (Status LED 14 lights up green).

External shutter-open signal

External shutter-open signal

Alternatively, an external shutter-open signal can be connected up via the socket for the foot-operated switch (9). With this signal, the shutter is opened via an external make contact (shutter opens when contact is closed – leading edge). The function is comparable to pressing the shutter-open key on the control panel.
The 6-pin plug available as an accessory should be used (Art. No. 1622, see chapter "Order data for equipment, spare parts and accessories", page 82.)

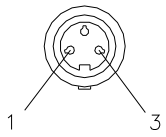
	
Assignment	Make contact between PIN 1 and 5
Contact rating	15VDC, 10mA
Cable length:	max. 5m

3-pin socket alternating contact

3-pin socket alternating contact

The 3-pin socket (10) is equipped with a potential-free alternating contact, which can be used for connecting up further external devices with higher power requirements (e.g. signal lamps, conveyor belts or solenoid valves).
The function can be assigned in the software menu: Settings: Function of Relais and when the equipment is delivered is set to “Signal lamp ready”“. (See chapter “Function of Relais“, page 44.)

The equipment should be connected using the 3-pin plug provided in the delivery.

	
Assignment:	PIN 1 NC, PIN 2 COM, PIN 3 NO
Contact rating:	max. 250 V / 3 A

Connecting light guides

Connecting light guides

- Remove protective caps from light guide.
- Insert the notched end of the light guide into the light guide socket (21) until the light guide engages.
- Place light guide in prescribed position.
- Fix light guide in position with the setscrew (23).

Note
With multiple light guides, intensity alignment must be carried out.
(See chapter “Adjusting the lamp“, page 79.)

Readiness for operation

Readiness for operation

The bluepoint 4 is ready for operation when the mains cable, the light guide and the foot-operated switch (optional) have been connected.

Basic functions

Basic functions

Basic procedure for entering or altering values

- Use arrow keys (17) to move cursor to desired parameter (e.g. TIME),
- Press Enter key (16) to access parameter,
- Use arrow keys (17) to alter value (e.g. 005.0 Sec).
  ▲ ▼ Increase/decrease by one unit
  ◄ ► Increase/decrease by one position
- Press Enter key (16) to store value.

Resetting the entry

Press the ▲ ▼ keys simultaneously to reset all digits to 0.

Note
If 30 seconds elapse without an entry being made, the value currently set is entered.

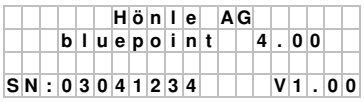
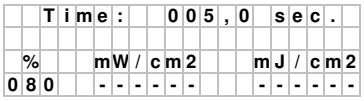
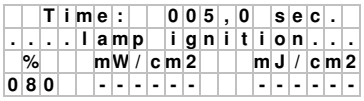
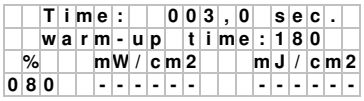
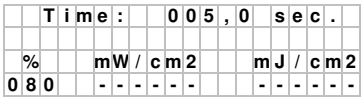
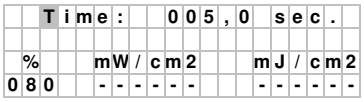
Switching on the equipment

Switching on the equipment

Note
The lamp cannot be switched off again during the warming-up period, as switching off a lamp before it is hot can damage the lamp and will reduce its service life.

Note
Avoid switching the lamp on and off unnecessarily! Each time the lamp is switched on or off, its service life is reduced. Only switch the lamp off if it is not needed for more than two hours.

The lamp can be switched on via the PLC interface (for a detailed description, see chapter “PLC mode“, page 60.)

Activity	Description	Display
Turn on main switch (2) on the rear of the equipment	Fan starts up Display (13) lights up SN: Serial number V: Software version	
Display automatically switches to basic mode.	TIME = Shutter opening time % = current power setting mW/cm2 = intensity mJ/cm2 = dose	
Press lamp on/off-switch (11)	Lamp is switched on Status LED (14) flashes green	
	Warm-up TIME of 180 seconds is counted down. Status LED (14) flashes green.	
	Lamp ready, Status LED (14): green = lamp ready orange flashing = Warning – lamp is on red flashing = Warning – lamp is not on red = Fault – lamp has been switched off (See chapter “Faults“, page 85 and chapter “Warning“, page 83.)	
Press Enter (16).	Cursor ▒ flashes. Display returns to basic mode if 30 seconds elapse without an entry being made.	

Note
The equipment must be calibrated in order to display the intensity [mW/cm2] and the dose [mJ/cm2]. A suitable measuring device is required for this purpose (e. g. a Hönle UV-Meter).

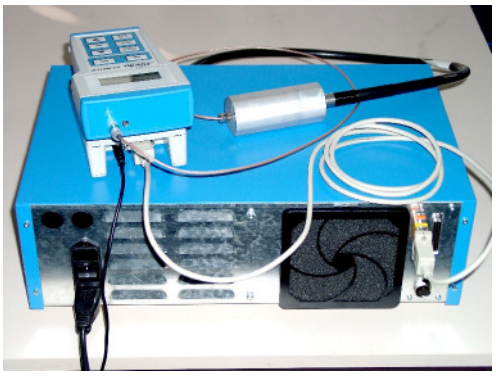
Calibration/ Power read-justment

Calibration

Calibrating the bluepoint 4 makes it possible to display the absolute value of the radiation intensity directly in mW/cm2. An external measuring device is used to determine the minimum and maximum radiation power output of the bluepoint 4. These values are then entered in the control system and can be used to calculate the radiation intensity in mW/cm2 at any given time proportional to the respective electrical power. Calibration must be repeated at least each time a lamp is replaced.
We recommend the use of the Hönle UV-Meter for simple and automated calibration. It can be connected up to the bluepoint 4 directly via the RS232. The readings are then transferred automatically.

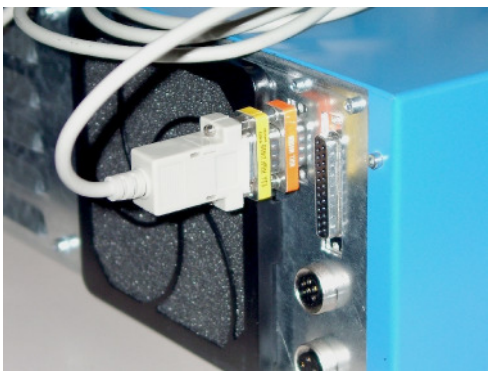
Calibration with the Hönle UV-Meter

Calibration with the Hönle UV-Meter



- Plug the docking station of the UV meter into the mains as described in the user's manual for the UV meter and prepare it for operation.
- Connect light guide sensor or other suitable sensor to Channel A of the UV meter.

Note
If the basic setting "UV-METER" was changed from "YES" to "NO", it has to be resetted.



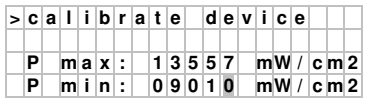
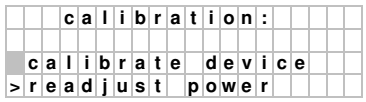
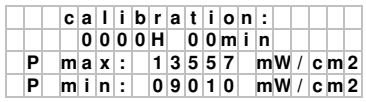
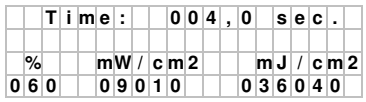
- Plug 9-pin Sub-D connection cable in to the bluepoint 4.
  To do this, you will require the RS232 adapter included in the delivery.
- Place Hönle UV-Meter in the docking station
- Carry out offset correction.
  (See User's Manual for the Hönle UV-Meter).
- Fully insert light guide into the UVA light guide sensor.

Activity	Description	Display
Press Menu key (15).	Cursor ▒ flashes at “calibrate device“.	CALIBRATION: ▒calibrate device >readjust power
Press Enter key (16).	* Symbols represent the waiting time.	>calibrate device ...please wait ... Pmax:***
	This message is displayed after waiting time has elapsed.	>calibrate device ...open shutter... Pmax:**********

- Check again that the light guide is inserted into the UVA sensor and is locked in place.

Danger
Observe safety instructions in chapter “Danger caused by radiation“, page 13!

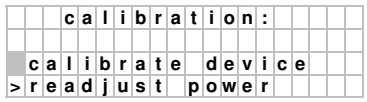
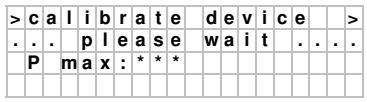
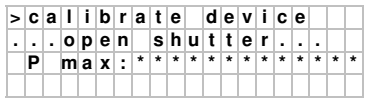
Activity	Description	Display
Press shutter key (19).	Shutter opens for 4 seconds.	>calibrate device Shutter OPEN Pmax:**********
	Automatic display of the max. radiation intensity. If necessary, the value can be adjusted using the cursor keys.	>calibrate device Pmax: 13557 mW/cm2
Press Enter key (16).	* Symbols represent the waiting time.	>calibrate device ...please wait ... Pmax: 13557 mW/cm2 Pmin:**
	This message is displayed after waiting time has elapsed.	>calibrate device ...open shutter... Pmax: 13557 mW/cm2 Pmin:**********
Press shutter key (19).	Shutter opens for 4 seconds.	>calibrate device Shutter OPEN Pmax: 13557 mW/cm2 Pmin:**********

Activity	Description	Display
	Automatic display of min. radiation intensity, If necessary, the value can be adjusted using the cursor keys.	
Press Enter key (16).	Equipment is calibrated.	
Press arrow key (17) ▼.	Time since last calibration. Max. radiation intensity. Min. radiation intensity.	
Press menu key (15) repeatedly until the standard menu is displayed.	Intensity and dose are shown in the standard display.	

Manual calibration

Manual calibration

If no Hönle UV-Meter is available, the minimum and maximum power output of the bluepoint 4 must be measured using another suitable measuring device. The readings must then be entered manually in the control system.

Activity	Description	Display
Press menu key (15) once.	Cursor ▒ flashes at “calibrate device“.	
Press Enter key (16).	* Symbols represent the waiting time.	
	This message is displayed after waiting time has elapsed:	

- Check again that the light guide is inserted into the UVA sensor and is locked in place.

Danger
Observe safety instructions in chapter “Danger caused by radiation“, page 13!

Activity	Description	Display
Press shutter key (19).	Shutter opens for 4 seconds. In this time, the UV intensity must be measured using a suitable measuring device.	>calibrate device Shutter OPEN Pmax:**********
The measured intensity in mW/cm2 can now be entered via the arrow keys (17). ▲▼ Increase/Decrease by one unit ◄► Increase/Decrease by one position		>calibrate device no UV-Meter!!! Pmax: 10900 mW/cm2
Press Enter key (16).	* Symbols represent the waiting time.	>calibrate device >...please wait .... Pmax: 10900 mW/cm2 Pmin:***
	This message is displayed after the waiting time has elapsed:	>calibrate device ...open shutter... Pmax: 10900 mW/cm2 Pmin:**********
Press shutter key (19).	Shutter opens for 4 seconds. In this time, the UV intensity must be measured using a suitable measuring device.	>calibrate device Shutter OPEN Pmax: 10900 mW/cm2 Pmin:**********
The measured intensity in mW/cm2 can now be entered via the arrow keys (17). ▲▼ Increase/Decrease by one unit ◄► Increase/Decrease by one position		>calibrate device no UV-Meter!!! Pmax: 10900 mW/cm2 Pmin: 07200 mW/cm2
Press Enter key (16).	Equipment is calibrated.	CALIBRATION: calibrate device >readjust power

Note
If the device does not recognize a Hönle UV-Meter during calibration, although “UV meter – Yes“ has been entered in the menu Settings, a warning message is issued for 5 seconds.

Power readjustment

Power readjustment

In this function, the set nominal value for the intensity is compared with the current reading and the electrical power readjusted as required, in order to offset the drop in intensity which occurs as the lamp service life progresses. Power readjustment can only be carried out in an automated process using the Hönle UV-Meter. For information on connecting up the Hönle UV-Meter, see chapter “Calibration with the Hönle UV-Meter“, page 30.

If the electronic ballast cannot set the required power value, e.g. because the lamp intensity is insufficient even at 100% power, a warning is generated (symbolised by an orange/green flashing status LED and a corresponding text message).

Note
The bluepoint 4 must be calibrated before the function “Readjust power“ can be activated.

Activity	Description	Display
Press menu key (15)	Cursor ▒ flashes.	CALIBRATION: calibrate device >readjust power
Press arrow key (17) ▼.		CALIBRATION: calibrate device >readjust power
Press Enter key (16).		>readjust power ...open shutter...
Press shutter key (19).	Shutter opens	>readjust power Shutter OPEN
	Power is readjusted and a warning generated if required.	CALIBRATION: calibrate device >readjust power
Press menu key (15) until the basic display appears, (further menus are explained at a later point).	If necessary, the power in % is adjusted so that radiation intensity and dose remain constant.	Time: 004,0 sec. % mW/cm2 mJ/cm2 068 07200 28800

If a warning message is generated, it will continue to be issued until cancelled manually

The message is deleted as follows:
- Set a new value for the electrical power, see chapter “Setting: Electrical power output“, page 36.
- Call up the function “readjust power“ again.
- Recalibrate the device with the function “calibrate device“.

Note
In order to ensure that there is enough leeway for power adjustment, the nominal power value for normal operation should be set to between 64 and 95%. Otherwise, a warning message will be generated if there are even slight fluctuations in lamp power.

Note
Electrical power output can only be readjusted in increments of 1% and therefore has to be rounded up or down for calculation purposes. This may result in minor deviations from the nominal value.

Operation

The radiation parameters time, intensity and dose must be determined individually for each application. These settings remain stored in the bluepoint 4 even when the supply voltage is switched off.

Note
Further parameter sets, e.g. for different products, can be entered in the menu: Settings; Load/Save parameters and can then be called up at any time simply by pressing a key.

Setting: Exposure time

The exposure time depends on
- the distance between the light guide and the object (the greater the distance, the lower the intensity and therefore the longer the exposure time required) and
- the type of adhesive used.

Caution
Exposing the object to radiation for too long can lead to damage to the object through overheating

Note
Observe the adhesive manufacturer's instructions!

The exposure time (shutter open time) can be set within a range between 0.1 and 999.9 seconds. A time setting of 000.0 seconds signifies continuous exposure – the shutter remains open.

Activity	Description	Display
Jump to parameter Time in the standard menu using the arrow keys (17) ▲▼ .	Cursor ▒ flashes at TIME.	Time: 004,0 sec. % mW/cm2 mJ/cm2 068 07200 028800
Press Enter key (16).	Cursor ▒ flashes at Value:	Time: 004,0 sec. % mW/cm2 mJ/cm2 068 07200 028800
The exposure time in seconds can now be entered using the arrow keys (17) . e. g. 10.0 sec. ▲▼ Increase/Decrease by one unit ◄► Increase/Decrease by one position	The time is stored and the dose calculated automatically (if the device has been calibrated).	Time: 010,0 Sek. % mW/cm2 mJ/cm2 068 07200 028800
Press Enter key (16).		Time: 010,0 Sek. % mW/cm2 mJ/cm2 680 07200 072000

Setting: Electrical power output

Setting: Electrical power output

The bluepoint 4 works with an electronic ballast for setting the electrical power output of the lamp within a range of between 60 and 100%. The control system automatically calculates the corresponding radiation intensity and displays it on the screen (provided that the bluepoint 4 has been calibrated, see chapter “Calibration“, page 30).

Activity	Description	Display
Jump to parameter % in the standard menu using the arrow keys (17) ▲▼, then press Enter key (16).	Cursor ▒ flashes at power.	Time: 010,0 Sek. % mW/cm2 mJ/cm2 060 07200 072000
The electrical power output can be adjusted using the arrow keys (17) ▲▼. Hold arrow key (17) in pressed down position, value is altered in increments, e.g. 80%.	Electr. power output is adjusted. Intensity and dose are automatically calculated.	Time: 010,0 Sek. % mW/cm2 mJ/cm2 075 08073 080730
Press Enter key (16).		

Note
The electrical power output of the ballast is not directly proportional to the intensity of the radiation emitted by the lamp.
Thus, an adjustment range of 60 – 100% electrical power output does not mean 60 – 100% radiation discharge.

Note
Over the course of time, the lamp intensity relative to the electrical power consumption decreases. Begin with a low electrical power in order to be able to offset the lamp ageing process for as long as possible.

Setting: Dose

Setting: Dose

Once the desired dose has been entered, the bluepoint 4 automatically calculates the time required. The set electrical power output is not altered. The dose can only be entered if the bluepoint 4 has been calibrated.

Activity	Description	Display
Use arrow keys (17) ▲▼ to move cursor to dose [mJ/cm2]. Press Enter key (16).	Cursor ▒ flashes at dose.	Time: 010,0 Sek. % mW/cm2 mJ/cm2 075 080730 080729
Enter dose using the arrow keys (17) (See TIME, page 36), e. g. 100000. Press Enter key (16).	Electrical power output and intensity remain the same, Exposure time is calculated.	Time: 012,4 Sek. % mW/cm2 mJ/cm2 075 080730 100104

Note
As the exposure TIME can only be given with an accuracy of 0.1 seconds, the dose is rounded up.
Dose = Intensity • exposure time

If the calculated exposure time is >999.9 seconds, the dose entered is automatically reduced to the value for 999.9 seconds.

Triggering an exposure cycle with set time

Triggering an exposure cycle with set time

In order to trigger an exposure cycle with a set time, an exposure time greater than 0 must be set (See chapter “Setting: Exposure time“, page 35). An exposure cycle can be triggered manually via the shutter key (19) on the front panel of the equipment or via the foot-operated switch.

Danger
Observe the safety instructions “Danger caused by radiation“, page 13!

Activity	Description	Display
Direct the end of the light guide at the object to be exposed. Press shutter key (19).	Shutter opens, object is exposed to radiation. The exposure time is counted down backwards	Time: 012,4 Sek. Shutter OFFEN! % mW/cm2 mJ/cm2 075 08073 100104
	The shutter closes after the set exposure time.	Time: 012,4 Sek. % mW/cm2 mJ/cm2 075 08073 100104

The exposure process can be interrupted by pressing the shutter key (19) again.

Activity	Description	Display
Press shutter key (19).	Shutter opens, object is exposed to radiation. The exposure time is counted down backwards.	Time: 012,4 Sek. Shutter OPEN! % mW/cm2 mJ/cm2 075 08073 100104
Press shutter key (19) again while object is being exposed to radiation.	Shutter closes immediately	Time: 012,4 Sek. % mW/cm2 mJ/cm2 075 08073 100104

Note
The shutter can only be opened if the lamp has ignited and is ready for operation (green status LED lights up) and if a light guide is plugged in. If these conditions are fulfilled and the shutter still fails to open when triggered manually, check whether the device is in PLC mode or a ProcessFLOW-Controller is still running.

Note
The shutter can also be opened via the PLC interface. For a detailed description of PLC mode, please see chapter “PLC mode“, page 60.

Continuous exposure

It is possible to set the bluepoint 4 for continuous exposure. To do so, the exposure time must be set to 000.0, see chapter “Setting: Exposure time“, page 35.
If the shutter key (19) or the foot-operated switch is pressed after the shutter has opened, it will remain open until the shutter key (19) or the foot-operated switch is pressed again.

Activity	Description	Display
Set exposure time to 000.0, then press Enter key (16).	Dose at 000000 mJ/cm2	Time: 000,0 sec. % mW/cm2 mJ/cm2 075 08073 000000
Press shutter key (19).	Shutter opens, Object is exposed to radiation. Exposure time is counted forwards, the dose is calculated continually.	Time: 001,0 sec. % mW/cm2 mJ/cm2 075 08073 008073
Press shutter key (19)again, e.g. after 6 sec.	Shutter closes,, Exposure time and dose are displayed (Precondition: Device is calibrated)	Time: 006,0 Sek. % mW/cm2 mJ/cm2 075 08073 49729
Press any key.	Display reset to 0.	Time: 000,0 Sek. % mW/cm2 mJ/cm2 075 08073 000000

Note
The shutter can only be opened if the lamp has ignited and is ready for operation (green status LED lights up) and if a light guide is plugged in. If these conditions are fulfilled and the shutter still fails to open when triggered manually, check whether the device is in PLC mode or a *ProcessFLOW-Controller* is still running.

Note
The shutter can also be opened via the PLC interface. For a detailed description of PLC mode, see chapter “PLC mode“, page 60.

Switching off lamp

Switching off lamp

Activity	Description	Display
Press lamp on/off key (11).	Lamp goes out; The cooling-down TIME of 60 seconds is counted down, Status LED (14) does not light up.	Time: 000,0 sec. cooling-down: 60 % mW/cm2 mJ/cm2 075 08073 000000
		Time: 000,0 sec. % mW/cm2 mJ/cm2 075 08073 000000

Note
The lamp cannot be ignited again during the cooling-down period.

Note
Avoid switching the lamp on or off unnecessarily! Each time the lamp is switched on or off, its service life is shortened. Only switch off the lamp if more than two hours will pass before it will be needed again.

Stand-by mode

Stand-by mode

If the lamp has been switched off and no entry is made within the set stand-by time, the device automatically switches to stand-by mode. The display and the fan are switched off, the red stand-by LED (12) lights up.
The equipment is delivered set to the default setting of 5 minutes: see chapter “Standby-time“, page 43.)

Activity	Description	Display
No entry for 5 minutes.		Time: 000,0 sec. % mW/cm2 mJ/cm2 075 08073 000000
	Red stand-by LED (12) flashes while equipment shuts down.	STANDBY - MODE *****
	Red stand-by LED (12) lights up, display dark, ventilator off.	

Warning
The equipment is still supplied with mains current while in stand-by mode. Pull out the mains plug before opening the slide-in lamp unit.

Exiting stand-by mode

Exiting stand-by mode

The equipment can be switched back to active mode by pressing any key.

Activity	Description	Display
Press any key.		STANDBY - MODE *****
	Basic display	Time: 000,0 sec. % mW/cm2 mJ/cm2 075 08073 000000

The device also switches back to active mode when:

- the PLC input Lamp On is set,
  see chapter “PLC input Lamp On“, page 60,
- the PLC input Dispensing is set,
  see chapter "PLC input Dispensing“,
  page 61,
- the PLC input Run is set, see chapter “PLC input Run“, page 61,
- a command is received via the RS232 interface,
  see chapter “RS232 commands “, page 65.

To switch the device off completely, press the main switch on the back of the equipment.

Displaying operating hours

Displaying operating hours

Activity	Description	Display
Basic display		Time: 000,0 sec. % mW/cm2 mJ/cm2 075 08073 000000
Use arrow key (17) ▼to move cursor down-wards.	Display jumps to the next section.	
	lamp: Shows the no. of lamp operating hours. device: Shows the total number of operating hours for the device. This value cannot be reset. °C : Shows the current temperature inside the device in °C.	Operating-hours Temp lamp: device: °C 00031h 00031h 41.0

Note
Lamp operating hours should be reset to zero each time a lamp is replaced! See chapter “Resetting lamp operating hours“, page 78.

Menu: Settings

Menu: Settings

Basic procedure for entering or altering values

- Use arrow keys (17) to move cursor to desired parameter (e.g. TIME),
- Press Enter key (16) to access parameter,
- Use arrow keys (17) to alter value (e.g. 005.0 sec).
  ▲ ▼ Increase/decrease by one unit
  ◄ ► Increase/decrease by one position
- Press Enter key (16) to save value.

Resetting the entry to zero

Press the arrow keys (17)▲ ▼ simultaneously to reset all digits to 0.

Note
If no entry is made for 30 seconds, the value currently set is saved.

Activity	Description	Display
From basic display: Press menu key (15) twice.		SETTINGS: >Key-Lock: OFF >Save parameter >Load parameter
Use arrow key (17) ▼ to move cursor downwards.	Display jumps to the next section	SETTINGS: >Language: ENGLISH >DOSE in: mJ/cm2 >Standby: 5 min
Use arrow key (17) ▼ to move cursor downwards.	Display jumps to the next section..	SETTINGS: >Function of relais >Function of plc-OUT >Function * key
Use arrow key (17) ▼ to move cursor downwards.	Display jumps to the next section..	SETTINGS: >Dose-unit: ---- >UV-Meter: YES

Language

Language

Here, the language can be selected.
There is a choice between:

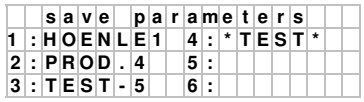
- DEUTSCH
- ENGLISH
- FRANCAIS
- ITALIANO

Save parameter

Save parameter

This function allows you to save entire parameter sets consisting of all settings (exposure time, electrical power output, intensity and dose) under a name of your choice. These parameter sets can then be recalled at the press of a switch.

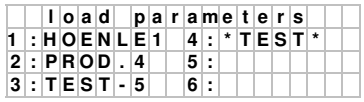
- There is storage space for a maximum of 6 parameter sets
- A name consisting of a maximum of 7 characters is assigned to the file.
- The file name is entered using the arrow keys (17).

Example	Display
Select storage position using arrow key (17) and confirm by pressing the Enter key (16) .	

Load parameter

Load parameter

Here, the saved parameters can be called up.

Example	Display
Select storage position using arrow key (17)and confirm by pressing the Enter key (16) .	

Key-lock

Key-lock

When the key-lock is active (“Key-lock ON“), all menu items and functions except the following are disabled:

- Lamp on/off key
- Shutter open key
- Menu/Settings/Key-lock
- Menu/Settings/Load parameters
- Menu/ProcessFlow-Control/Start
- Menu/Dispensing/Manual dispensing (if dosage unit is used)
- Menu/Dispensing/Rinse valve (if dosage unit is used)

Dose

Dose

In the standard display, the dose is given in mJ/cm2 .
For very long exposure times, it may be advisable to display the dose in J/cm2. This menu item allows you to change the units in which the dose is displayed.
There is a choice between:

- mJ/cm2 and
- J/cm2.

Standby-time

Standby time

Here, you can select the period of time after which the equipment is to switch to stand-by mode.

- A time between 0 and 999 minutes can be selected.
- A time of 0 deactivates the stand-by function.

Function of Relais

Function of Relais

With the bluepoint 4, it is possible to assign any selected function to a potential-free alternating contact in order to make further signals available externally. The function of the alternating contact at the 3-pin socket (10) can be assigned with menu item Settings/Function of Relais, see chapter “3-pin socket alternating contact“, page 27“.

Description	Display
Relay without function.	Function of Relais 0:-----
PIN 2 and 3 closed if fault.	1:Error
PIN 2 and 3 closed if warning.	2:Warning
PIN 2 and 3 closed if shutter open.	3:Shutter opened
PIN 2 and 3 closed if shutter closed.	4:Shutter closed.
PIN 2 and 3 closed lamp on.	5:Lamp is on
PIN 2 and 3 closed lamp on and warm (default setting).	6:Lamp ready
PIN 2 and 3 closed equipment on mains, main switch on.	7:Device is on
PIN 2 and 3 closed if equipment controlled by PLC.	8:SPS-Mode aktiv
PIN 2 and 3 closed for 0.5 sec. when dosage cycle has been completed.	9:Dosage finished
PIN 2 and 3 closed when dosage cycle running.	10:Dosage running
PIN 2 and 3 closed if output is activated. Can be activated via: the function “ProcessFLOW-Control” the RS232 interface the * key (18) (Precondition: corresponding function is assigned)	11:Signal-Output
PIN2 and 3 closed if device is being calibrated or readjusted.	12:Running calibr.

Function of PLC output

This menu item can be used to assign the function of PLC output 3 at the 25-pin SUB-D socket (8). (For assignation, see chapter “Pin assignment“, page 62.)
The following messages are possible:

Description	Display
Output is not triggered.	Function of SPS-OUT 0:----
A fault has occurred.	1:Error
A warning has been issued (default setting).	2:Warning
Shutter is open.	3:Shutter opened
Shutter is closed.	4:Shutter closed
Lamp has lit up.	5:Lamp is on
Lamp is on and warmed up “ready for operation”.	6:Lamp ready
Equipment connected to mains, main switch on.	7:Device is on
Equipment controlled by PLC.	8:SPS-Mode aktiv
0.5 sec. set after each completed dosage cycle.	9:Dosage finished
Dosage process running.	10:Dosage running
Output is activated. Activation possible via: the function “ProcessFLOW-Control“, the RS232 interface or the * key (18) (Precondition: corresponding function is assigned).	11:Signal-Output
When device is being calibrated or readjusted.	12:Running calibr.

*Function of * Key*

Function of * Key

Various functions can be assigned to the * key (18) for easy access. The following actions can be assigned to the * key (18):

Description	Display
*-key without function.	Function of * Key 0 : - - - - -
Display switches to menu Settings, line Key-lock.	1 : Key - lock
Display switches to menu Settings, Load parameter.	2 : Load parameters
Display switches to menu Settings, Save parameter.	3 : Save parametersh.
Display switches to basic display, line Operating hours.	4 : Operating hours
Key function Signal output switches as long as the * key (18) is kept pressed (only if contact is set to 10: Signal output. See chapter “Function of Relais“, page 44.)	5 : Output on
Switch function Signal output is switched via the * key (18) and holds until the * key (18) is pressed again. (only if contact is set to 10: signal output. See chapter “Function of Relais“, page 44.)	6 : Output change
Equipment switches to stand-by mode (Precondition: lamp is switched off).	7 : Standby function
A previously programmed sequence is started. (See chapter ”!ProcessFLOW-Control“, page 48.)	8 : Start ProcessFlow
Display switches to menu Calibration.	9 : Calibrate device
Display switches to menu Readjust power.	10 : Power readjust
Display switches to menu VALVE-CONTROL/>manual dispensing; a dispensing process is started manually.	11 : manual dispensing
Display switches to menu VALVE-CONTROL/>rinse valve; the valve is open continuously.	12 : Rinse valve
Display switches to menu NUMBER OF DOSAGES; the number of dosages already carried out is displayed.	13 : Number of dosages

Note
If the * key (18) is used to switch the signal output (function 5 or 6), it is also necessary to assign the corresponding function to the relay or the PLC output.
(See chapter “Function of Relais Relais“, page 44 or chapter “Function of PLC output“, page 45.)

Dosage units

Dosage units

Various dosage units/dosage valves can be activated via the bluepoint 4.
The appropriate device can be selected from menu item Dosage-unit. An additional menu “DOSAGES“ then appears between the main menus. (See chapter “Displaying the menu Dosage“, page 54).

Activity	Description	Display
Press menu key (15) until menu Dosage-Unit appears. Select a device using the arrow keys (17) ▼.	Available: ----- no unit Pilot dose unit Pilot 1000	SETTINGS: >Dose-unit: ----- >UV-Meter: YES

UV Meter

UV Meter

This menu item is used to specify whether, in the process of calibration or the function “Readjust power“, the current readings are automatically scanned by a Hönle UV-Meter via the RS232.
If the bluepoint 4 is operated via the RS232 of a PC or a PLC, the setting must be “NO“.

Note
If no UV meter is detected during the calibration process, the readings must be entered manually in the control system.

Note
If no UV meter is detected in the function “Readjust power“, and if the UV-Meter setting is YES, the control system generates a warning for the duration of 5 seconds. This warning indicates that no data is available and that the power can therefore not be readjusted.

ProcessFLOW-Control:

ProcessFLOW-Control:

General information

General information

The function “ProcessFLOW-Control“ enables the execution of entire program sequences (consisting of radiation processes, waiting times, alteration of parameters and dosages and driving additional external devices). It enables the integration of the bluepoint 4 into automated production processes without the necessity of an external PLC.
In manual mode, too, a complete sequence can be worked through again and again with the function “ProcessFLOW-Control“, without the operator having to repeatedly call up the functions individually on the bluepoint 4.

Programming is carried out either directly on the bluepoint 4 or the entire program is set up with a computer. It can then be transferred from the computer to the bluepoint 4 via the RS232 interface.

The program for the function “ProcessFLOW-Control“ consists of a maximum of 99 lines. One command can be assigned to each line. A waiting time can be programmed for each line, a period that must elapse before the command is carried out.
When the function “ProcessFLOW-Control“ has been initiated, the bluepoint 4 starts to work through the command in program line 1. Once this command has been executed, the bluepoint 4 moves from line to line, working through the whole program.
The user can abort the function “ProcessFLOW-Control“ at any time. Jump commands can also be built in, instructing the bluepoint 4 to move to other program lines, thus enabling specific parts of the program to be run through repeatedly.

Starting ProcessFLOW-Control manually

Starting ProcessFLOW-Control manually:

Activity	Description	Display
Press menu key until the menu ProcessFLOW-Control appears. Use the arrow key (17) ▼ to move to Start position.	Cursor ▒ flashes.	ProcessFLOW-Control: START edait clear
Press Enter key (16).	The ProcessFLOW-Control begins at line 1. The waiting time runs down.	ProcessFLOW-Control: 01: 003;2 LPON ->EXIT with Enter
	When the waiting time has elapsed, the command is executed.	ProcessFLOW-Control: ...lamp ignition.... 01: 000,0 LPON ->EXIT with Enter
	After execution of the command, there is a jump to the next line.	ProcessFLOW-Control: warm-up time:118 sec 02: 001,0 SETT 003,5 ->EXIT with Enter

If a command cannot be executed, the bluepoint 4 generates a warning (status LED flashes red/orange).
Example: The shutter cannot be opened because no light guide is plugged in.

The warning can be reset by pressing any key. The non-executable command is ignored and the bluepoint 4 moves to the next program line.

The function ProcessFLOW-Control can also be started via:
- the PLC interface, see chapter “PLC input Run“, page 61.
  or
- the RS232, see chapter “RS232 commands page 65.

Terminating/aborting ProcessFLOW-Control:

Terminating/aborting ProcessFLOW-Control

Once the Start command has been given, the function ProcessFLOW-Control works through the program line by line. It can be terminated as follows:
- By pressing the Enter key(16) if the function ProcessFLOW-Control was started via the keypad.
- Automatically, after execution of the command in line 99.
- Executing the command STOP in the program (see next chapter “Commands for the function “ProcessFLOW-Control“, page 50.)
- The command STOP is received via the RS232.
- The input is set back to 0 if the function “ProcessFLOW-Control“ was started via the “PLC input Run“.

Commands for the function "Process-FLOW-Control"

Commands for the function "ProcessFLOW-Control"

The following commands are available for the function "ProcessFLOW-Control":

Description	Command	Parameter
Lamp control:		
Setting electrical power output in %	**SETP**	**60...100**
Setting shutter time in sec.	**SETT**	**0,00...999.9**
Setting dose in mJ/cm2	**SETQ**	**0...999999**
Switch lamp on	**LPON**	
Switch lamp off	**LPOF**	
Open shutter	**SHOP**	
Close shutter	**SHCL**	
Start power readjustment	**PADJ**	
Dosage control:		
Setting no. of dosages	**SETD**	**0...9999**
Setting dosage time in ms	**SETO**	**0,00...999.99**
Setting pause time in ms	**SETC**	**0,00...999.99**
Setting start delay	**SETL**	**0...999**
Start dosage	**DOSS**	
End dosage	**DOSE**	
PLC/Relay output:		
Output on/off	**SOUT**	**0=off, 1=on, 2=change**
Standby Function:		
Switch device to standby	**STBY**	
Waiting functions		
Wait until lamp is ready	**WLMP**	
Wait until dosage is completed	**WDOS**	
Wait until shutter is closed	**WSHC**	
Wait for foot-operated switch	**WFSW**	
Wait for PLC input open shutter	**WPLC**	
Wait for shutter key	**WKEY**	
Load/Save parameters:		
Load parameter set from memory	**REGL**	**0...6**
Store parameter set in memory	**REGS**	**0...6**
ProcessFLOW-Control automatic program sequence		
Exit automatic program sequence	**STOP**	
Jump command to other program line	**GOTO**	**01...99**
Jump is PLC input DOS set	**IFIN**	**01...99**
Diagnosis function:		
Send Device Report via RS232 (See chapter "Sending a Device Report via the RS232 ", page 70).	**DRPT**	

Defining program sequence for function “ProcessFLOW-Control“ manually

Defining program sequence for function “Process-FLOW-Control“ manually

It is possible to define your own sequences by entering the commands directly into the bluepoint 4. This will only take a few minutes and does not require programming skills. The table above, ’Commands for the function “ProcessFLOW-Control“, shows the commands to be entered.

Note
To delete a line in the function ProcessFLOW-Control, press the arrow keys (17) ▼ ▲ in the Edit menu simultaneously instead of the Enter key (16) after selecting the program line to be deleted.

Activity	Description	Display
Press menu key until the menu ProcessFLOW-Control appears: Move to the edit position using the arrow keys (17) ▼►.		ProcessFLOW-Control: START edit clear
Press Enter key (16).	Current program is displayed.	Nr Time Instruction 01: 000,0 ---- 02: 000,0 ---- 03: 000,0 ----
Use the arrow keys (17) ▲▼ to select the program line you wish to alter. Hold the key pressed = fast forward	Scroll through program lines.	Nr Time Instruction 07: 000,0 ---- 08: 000,0 ---- 09: 000,0 ----
Press Enter key (16).	Cursor jumps to the program line.	Nr Time Instruction 07: 000,0 ---- 08: 000,0 ---- 09: 000,0 ----
The individual positions can be altered using the arrow keys (17) ▲▼. Use the arrow keys ◄► to jump to the next position.	Set waiting time, command and possibly parameters.	Nr Time Instruction 07: 000,0 ---- 08: 001,0 SETT 003,5 09: 000,0 ----
Press Enter key (16).	Program line is saved.	Nr Time Instruction 07: 000,0 ---- 08: 001,0 SETT 003;5 09: 000,0 ----
Repeat process for the other program lines.		Nr Time Instruction 07: 005,0 SHOP 08: 001,0 SETT 003;5 09: 002,0 SHOP
Press menu key(15).	Exit edit function.	ProcessFLOW-Control: START edit clear

Note
Parameter settings made with the command SETx (exposure time, electr. power output etc.) are not permanently saved during the program sequence of the function ”ProcessFLOW-Control“ – unlike entries made via the keypad!
They are lost when the device is switched off!
If the settings are to be displayed again the next time the equipment is switched on, the command REGS 0 must be inserted in the automatic program sequence.

Example of a program sequence with the function “Process FLOW-Control”

Example of a program sequence with the function “ProcessFLOW-Control:“

The task is to harden two bonding locations with the bluepoint 4. The first bonding location is to be hardened with an exposure time of 3 seconds and a power output of 80%, but the second bonding location with an exposure time of only 2.5 seconds. The shutter is to be activated via the foot-operated switch in both cases.

Description	Display
Switch lamp on. Electrical power output at 80 %. Wait until lamp is ready.	Nr Time Instruction 01: 000,0 LPON 02: 000,0 SETP 80 03: 000,0 WLMP
Wait until foot-operated switch is pressed. Exposure time at 3 seconds. Open shutter.	Nr Time Instruction 04: 000,0 WFSW 05: 000,0 SETT 003,0 06: 000,0 SHOP
Wait 3.5 seconds and then wait again until foot-operated switch is pressed. Set exposure time to 1.5 seconds. Open shutter.	Nr Time Instruction 07: 003,5 WFSW 08: 000,0 SETT 001,5 09: 000,0 SHOP
Wait 3.5 seconds, continue with line 04.	Nr Time Instruction 10: 003,5 GOTO 04 11: 000,0 ---- 12: 000,0 ----

Note
Other example programs and tips for creating automatic program sequences can be found in the Appendix.

Note
Chapter “RS232 interface“, page 64, explains in detail how to create programs on a PC and transfer them via the RS232 interface.

Completely deleting the program for function “Process-FLOW-Control“

Completely deleting the program for function “ProcessFLOW-Control“

Activity	Description	Display
Press menu key 3 x until the menu ProcessFLOW-Control appears: Jump to position Clear using arrow key (17) ▼.		ProcessFLOW-Control: START edit clear
Press Enter key (16).	Cursor is at NO.	Clear all lines? NO YES
Press arrow key (17) ►.	Cursor is at YES.	Clear all lines? NO YES
Press Enter key (16).	All lines are cleared.	ProcessFLOW-Control: START edit clear

7 Control system for dosage unit (optional)

General information

General information

As an option, the bluepoint 4 is available equipped with a control device for an external dosage valve. This makes it possible to control the dispensing of adhesives and the hardening process with UV radiation. The dispensing of adhesive and the exposure can be combined in an automatic program sequence (function “ProcessFLOW-Control“), thus enabling a complete system solution with just one device.

Starting the dosage process

Starting the dosage process

The dosage process can either be started via

- the PLC input Dispensing, see chapter “PLC input Dispensing“, page 61;
- the function “ProcessFLOW-Control“, see chapter “ProcessFLOW-Control“, page 48 or
- the control panel with the function “Manual dispensing”. (See chapter “Manual dispensing“, page 56.

Warning
Each bluepoint 4 that has a dosage control system is delivered with a detailed user’s manual for the control device and the dosage valve. It is vital to read this manual **!!!before** you plug the valve in! The safety instructions must be observed precisely!

Connecting up the dosage valve

Connecting up the dosage valve

- The dosage valve is plugged into the socket (24) on the back of the bluepoint 4.

Warning
The dosage control device Pilot 1000 **must** be in switched off condition when the valve is plugged in (even if the bluepoint 4 is switched off / unplugged)!
Failure to observe this may lead to damage to the valve or the bluepoint 4!

Warning
Very high voltages are required to drive the dosage valve. This means that either the cable provided or an extension lead available as an option must be used.

Displaying the menu Dosage

Displaying the menu Dosage

The dosage unit is driven via a special “Dosage“ menu. This menu is located between the menus “Calibration“ and “Settings“. It is only displayed if a dosage unit has been selected in menu “Settings“ (See chapter “Dosage units“, page 47).

Setting dosage parameters

Setting dosage parameters

Each dosage process is governed by three parameters:
- dosage time
- pause time and
- repeats (see user's manual for dosage unit).

These three parameters are set in the main menu Dosage:

Activity	Description	Display
Use the arrow keys (17) ▲ ▼ to jump to dosage parameters in the menu Dosage.	Cursor ▓ flashes at DOSAGES	DOSAGES : 0000 Dosagetime Pause 000,00ms 000,00ms
Press Enter key (16).	Cursor ▓ flashes at value	DOSAGES : 0000 Dosagetime Pause 000,00ms 000,00ms
The number of dosages can now be entered using the arrow keys (17) ▲▼. ▲▼ Increase/decrease by one increment ◄► move one position to the left/right Press Enter key (16).	Parameter is saved.	DOSAGES : 0015 Dosagetime Pause 000,00ms 000,00ms
Repeat for parameters dosage time and pause.	.	DOSAGES : 0015 Dosagetime Pause 035,00ms 020,00ms

An entry of 0000 at number of dosages means continuous dosage.
The set dosage pause time is repeated until the dosage signal is given (either via the PLC input or by manual entry).

Note
Observe the limit values for dosage frequency/number of dosages!

A pause time of 000.00 means that the valve does not close between the dosages.
This is for example advisable in the case of very long dosage times (up to 9999 sec.).

Limit values for dosage frequency/number of dosages

Limit values for dosage frequency/number of dosages

Maximum dosage frequency for up to 150 dosages: 1 kHz
Maximum dosage frequency for continuous operation: 150 Hz

For individual dosages (number of dosages < 150) the maximum frequency for dosage is 1 kHz. The bluepoint 4 monitors whether this precondition is fulfilled and adjusts the pause time accordingly where necessary (dosage time + pause time ≥ 1ms).

If dosage time and pause time mean a dosage frequency of > 150 Hz and if a number of dosages > 150 or continuous dosage is set, the warning “DOSAGE FREQUENCY” appears on the display.
If this happens, the number of dosages is automatically limited to 150.

Rinsing the valve

Rinsing the valve

There is a special menu item available in the dosage menu for rinsing the valve (continuous opening regardless of the set dosage parameters).

Activity	Description	Display
Press the arrow key (17) ▼ repeatedly in the menu Dosage until the cursor flashes at Rinse valve.	Cursor ▓ flashes at Rinse valve.	VALVE-CONTROL >rinse valve >manual dispensing >start delay 000 ms
Press Enter key (16).	Valve remains open until the Enter key (16) is released again.	VALVE-CONTROL >rinse valve ==*== >manual dispensing >start delay 000 ms

The function Rinse valve can also be assigned to the * key (18). See chapter “Function of * Key“, page 46.

Manual dispensing

Manual dispensing

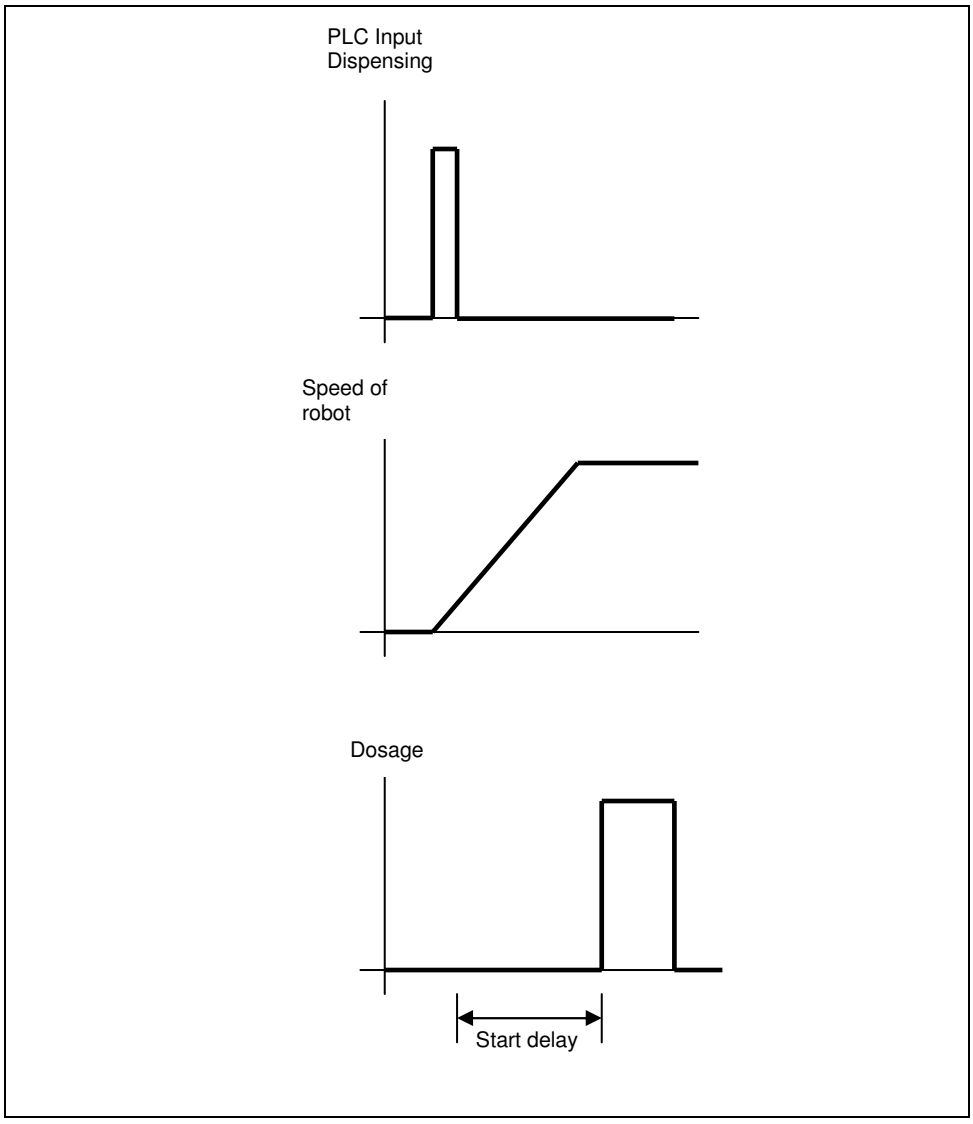
A dosage process with the set parameters can be started manually.

Activity	Description	Display
Press the arrow key (17) ▼ repeatedly in the menu Dosage until the cursor flashes at Manual dispensing.	Cursor ▓ flashes at Manual dispensing.	VALVE-CONTROL >rinse valve >manual dispensing >start delay 000 ms
Press Enter key (16).	Dosage process with set parameters is started.	VALVE-CONTROL >rinse valve >manual dispensing >start delay 000 ms

The function “Manual dispensing“ can also be assigned to the * key (18). See chapter “Function of * Key“, page 46.

Setting start delay

If the dosage valve is connected to an industrial robot or an XYZ-table, a movement is often initiated simultaneously with the provision of the dispensing signal. This movement will only reach its prescribed speed after a certain delay.
For more precise dosage, a defined start delay between the provision of the dispensing signal and the start of the actual dosage process can be programmed on the bluepoint 4.



Dosage counter

Dosage counter

The dosage counter counts the number of dosages that have been carried out. The count is stored even when the supply voltage is switched off. It can be reset to 0 using the function “Dosage counter reset“.

Activity	Display
In the menu dosage, press the arrow key (17) ▼ repeatedly until the dosage counter is displayed.	DISPENSING-COUNTER: 00000156 Warning-limit Reset 00010000

The function “Display dosage counter“ can also be assigned to the * key (18). See chapter “Function of * Key“, page 46.

Dosage counter warning limit

Dosage counter warning-limit

The number of dosages provides a rough idea of how much adhesive is being used. On the bluepoint 4, a warning-limit can be defined. When this limit is exceeded, a warning is issued.

Note
Counting the number of dosages administered in order to monitor how much adhesive is left only provides a very rough estimate, as the entry on the dosage counter does not take into account how much adhesive is used when rinsing the valve.

Activity	Description	Display
In the menu Dosage, press the arrow key (17) ▼ repeatedly until the cursor flashes at warning-limit.	Cursor ▒ flashes at warning-limit	DISPENSING-COUNTER: 00000156 Warning-limit Resett 00010000
Press Enter key (16).	Cursor ▒ flashes at numerical value	DISPENSING-COUNTER: 00000156 Warning-limit Reset 00010000
Use arrow keys (17) to set warning-limit.		DISPENSING-COUNTER: 00000156 Warning-limit Reset 00010000

Dosage counter reset

Dosage counter reset

The user can reset the dosage counter to 0.

Activity	Description	Display
In the menu Dosage, use the arrow key (17) ▼ to jump to menu item Reset.	Cursor ▒ flashes at warning-limit Reset.	DISPENSING-COUNTER: 00000156 Warning-limit Reset 00010000
Press Enter key (16).		DISPENSING-COUNTER: 00000000 Warning-limit Reset 00010000

Dosage counter total

Dosage counter total

The bluepoint 4 also provides a second dosage counter which registers the total number of dosages administered since the control device was installed.
This counter is used to monitor maintenance and servicing intervals.

Activity	Description	Display
In the menu Dosage, press the arrow key (17) ▼until the dosage counter total appears.	The total number of dosages is displayed exponentially in the bottom line.	DISPENSING-COUNTER: total: 0000000000156 1.56E2

Note
The “Dosage counter total“ can also be reset to 0. To do this, press the Enter key (16) for at least 3 seconds in Menu/Dosage/Dosage counter.

8 PLC mode

General information

General information

The bluepoint 4 can also be operated via an external control system or PLC (programmable logic controller) if desired. It is equipped with a PLC interface to allow the most important device functions to be controlled and monitored.

The interface is electrically isolated via optocouplers and must be supplied with an external auxiliary voltage (Uext = 10 – 30 VDC).

Technical data PLC inputs:	**Input = 1**	**Input = 0**
Max. permissible voltage	10 – 30 VDC	0 – 0.5 VDC
Input current	2 – 10 mA	
Input impedance	4700 Ohm	

Technical data PLC outputs:		
Max. permissible voltage	10 – 30 VDC	
Max. permissible output current	30 mA	

Warning
The PLC interface can suffer damage if the limits given above are exceeded.
The PLC outputs are not permanently short-circuit-proof!!!

PLC input Lamp On

Activating PLC mode - PLC input Lamp On:

PLC mode is activated by setting the PLC input Lamp On.
The lamp is thus ignited and the bluepoint 4 awaits the command to open the shutter at the PLC interface. The pushbuttons “Lamp On“ (11) and “Open shutter“ (19) are deactivated. The function “ProcessFlow-Control“ can only be started via the PLC. Parameters such as exposure time and electrical power output can be set in the usual manner.

Note
In PLC mode, the lamp can only be switched off by resetting the PLC input Lamp On.
Here again, the lamp cannot be reignited during the cooling-down period. If the PLC input Lamp On is set, the signal will be ignored until the cooling-down period has elapsed.

Note
Unlike in manual operation, in PLC mode, the lamp can also be switched off prematurely during the warming-up period by resetting the PLC input Lamp On.
However, in the interest of long lamp service life, the user should avoid doing this wherever possible.

Note
Avoid switching the lamp on and off unnecessarily! Each time the lamp is switched on or off, its service life is reduced. Only switch the lamp off if it will not be needed for more than two hours.

PLC input Shutter open

PLC Input Shutter open

The PLC input Shutter open controls the shutter.

- If the exposure time is set to 000.0 sec., the shutter remains open as long as the PLC input Shutter open is set.
- If an exposure time greater than 000.0 sec. is set, the shutter opens with the leading edge at the PLC input Shutter for the set time. Another leading edge is required to open the shutter again.

This PLC input is used under the “Function ProcessFLOW-Control“ for the function WSPS. As soon as the bluepoint 4 carries out an automatic program sequence (Function “Process-FLOW-Control“), the shutter does not open when the PLC input shutter open is set.

Danger
Observe the safety instructions in chapter “Danger caused by radiation“, page 13!

Note
The key-lock should be activated to prevent accidental and inappropriate alteration of parameters.
(See chapter “Key-lock“, page 43.)

PLC input Dispensing

PLC input Dispensing

A dosage cycle is started with this input if the bluepoint 4 is fitted with a corresponding dosage unit. For further information, please see the specific user’s manual.

In the automatic program sequence (Function “ProcessFLOW-Control“), this PLC input is used for the function IFIN. As soon as the bluepoint 4 carries out an automatic program sequence, no dosage cycle will be started with this input. The input serves as a query criterion for a conditional jump command – for further information, see the programming examples in the Appendix.

PLC input Run

PLC input Run

An automatic program sequence is started with this input. As soon as the input is set, the commands are worked through, starting with line 01 of the function “ProcessFLOW-Control“. Any exposure process that is underway will be aborted.
As soon as the PLC input Run is reset, the device stops working through the commands in the current line. Any exposure process that is underway will be aborted.

PLC outputs

PLC outputs

Users have the following outputs at their disposal:

- Device switched on
- Lamp ready
- Shutter opened
- Group fault message
- PLC output with variable function (Assignment via menu: Settings, chapter “Function of PLC output“, page 45.)

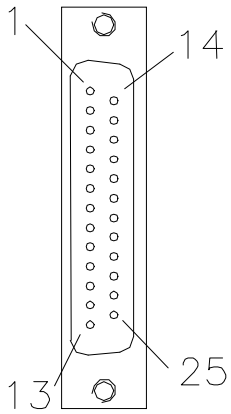
Devices with an additional dosage unit have two further PLC outputs:

- Individual dosage completed
- Valve temperature OK

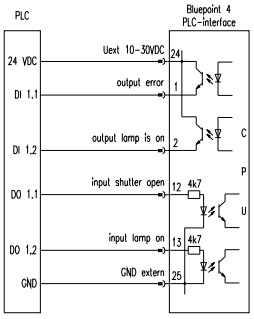
Pin assignment

Pin assignment

PIN	Function
1	Output: Group fault message, High = Fault
2	Output: Lamp ignited and warmed up, High = Lamp ready
3	Output: programmable PLC output, see chapter “Function of PLC output“, page 45.
4	Output: Shutter open, High = Shutter is open.
5	Output: Device on High = Device on mains, main switch closed.
6 - 9	Do not use (for factory use only)
10	Input: ProcessFLOW-Control chapter "PLC input Run“, page 61. High = starts program sequence
11	Input: Dispensing, High starts dispensing or in function “ProcessFLOW-Control“ conditional jump IFIN,
12	Input: Shutter open, opens shutter as soon as status is high
13	Input: Lamp On Lamp on as long as status is high
14	Output: Status Dispensing (only with dosage control), High pulse after each individual dosage.
15	Output: Valve temperature (only with dosage control), High at nominal temperature.
16 - 23	Do not use (for factory use only).
24	External voltage: 10 – 30 VDC
25	External earth



The following illustration shows an example for connecting the interface in- and outputs to a PLC module.



9 RS232 interface

General information

General information

The bluepoint 4 is equipped with a serial RS232 interface for connecting it up to a PC or a PLC. The RS232 enables:

- direct communication with the Hönle UV-Meter when it is used as a reference device for calibration or power readjustment,
- remote control of all bluepoint 4 functions with PC or PLC via the RS232,
- alteration of parameters in automated operation via a PLC or a PC.

Various programs for the function “ProcessFLOW-Control“) can be created, administered and transferred to the bluepoint 4 as required .

Note
This method is far preferable to manual entry wherever it is desirable to change programs frequently.

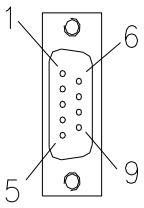
Pin assignment RS232 plug

Pin assignment – RS232 plug

- The device is connected to the RS232 interface by means of a 9-pin Sub-D plug (7) on the rear of the equipment housing.
- A high-quality screened line must be used.
- The line must not be longer than 10 m.

For safety reasons, the bluepoint 4 offers an electrically isolated serial interface, i.e. the lines TxD, RxD and GND for RS232 are electrically isolated against earth.

PIN	Function
2	TxD – Transmit Data
3	RxD – Receive Data
5	GND for RS232
1,4,6,7,8,9	Not in use
Screening	Connected with PE connection via housing



Communications programs

Communications programs

Any communications program can be used as a terminal program. PCs with the Windows operating system are equipped with the HyperTerminal program. It is located under Start menu ->Programs->Accessories->Communications->Hyper Terminal.
It is also possible to operate the RS232 serial interface from any other programming environment (e.g. VBA, LabView, etc.).

When operating the bluepoint 4 at the RS232 serial interface of a PLC, please observe the PLC manufacturer’s programming reference.

Note
In the Appendix, you will find a detailed description of the Hyper Terminal program configuration.

Transmission parameters

Transmission parameters

The transmission parameters set on the bluepoint 4 are as follows:

Baud rate	9600 bits per second
Data bits	8
Parity	none
Stop bits	1
Protocol/Flow Control	-

The terminal or transmission program used must be set to comply with these parameters.

Note
If the transmission parameters are incorrect, no communications will be possible or malfunctions may occur.

RS232 commands

RS232 commands

A series of commands is available for remote control of the bluepoint 4 via the RS232. They are defined as follows:

- The **:** sign (ASCII 58 or 0x3A) must be transmitted before each command for initialisation of execution of the command.
- Each command consists of 4 ASCI characters and may be followed by a parameter.
- Each command ends with a CR (ASCII 13 or 0x0D).

Examples	
Ignite lamp:	**:LPON ↵**
Change exposure time to 3.5 seconds:	**:SETT 3,5 ↵**

It takes more time to run some commands than others.
During this time, the bluepoint 4 cannot accept any further commands via the RS232 and any commands transmitted will be ignored.
The run time is shown in the table of commands.
All commands whose run time = 0 can be transmitted in direct succession.

Description	**Com-mand**	**Parameter**	**Run time**
Lamp control:			
Set electr. power output in %	**SETP**	**60...100**	0 ms
Set shutter time in seconds	**SETT**	**0.00...999.9**	0 ms
Set dosage in mJ/cm2	**SETQ**	**0...999999**	0 ms
Set start delay	**SETL**	**0...999**	0 ms
Switch lamp on	**LPON**		50 ms
Switch lamp off	**LPOF**		50 ms
Open shutter	**SHOP**		50 ms
Close shutter	**SHCL**		50 ms

Description	Com-mand	Parameter	Run time
Dosage control:			
Set number of dosages	**SETD**	**0...9999**	0 ms
Set dosage time in ms	**SETO**	**0.00...999.99**	0 ms
Set pause time in ms	**SETC**	**0.00...999.99**	0 ms
Start dispensing	**DOSS**		50 ms
End dispensing	**DOSE**		50 ms
PLC/Relay output:			
Output on/off	**SOUT**	**0=off, 1=on, 2=changel**	50 ms
Standby function:			
Switch device to standby	**STBY**		0 ms
Loading/Saving parameter sets:			
Load parameter set from memory	**REGL**	**0...6**	500 ms
Save parameter set in memory	**REGS**	**0...6**	500 ms
Sequence control ProcessFLOW-Control:			
Start ProcessFLOW-Control	**STAR**		50 ms
Stop ProcessFLOW-Control	**STOP**		50 ms
Diagnosis function:			
Send Device Report via RS232 (See chapter “Sending a Device Report via the RS232 “, page 70).	**DRPT**		800 ms

Note
Parameter settings (exposure time, electr. power output etc.)are not stored permanently when set via the RS232, as they are when entered manually via the control panel!
They are lost when the device is switched off!
If the settings will be needed again the next time the equipment is switched on, finish by inserting the command REGS 0.

Configuration file for the RS232

Configuration file for the RS232

Alternatively, the bluepoint 4 can be configured via the RS232. All parameter settings are collected in one text file. This file is then transmitted to the bluepoint 4 via the terminal program.
It is very quick and easy to change parameters, for example for a new product. All relevant data is defined in a text file on the PC and can be administered there without problems.

The following table shows what such a file could look like:

Configuration file Product xy:	
:SETT 3,5	//Time to 3.5 secs.
:SETP 80	//Electr. power output 80%
:SETO 12,1	//Dosage time 12.1 ms
:SETC 50,5	//Pause time 50.5 ms
:SETD 100	//No. of dosages 100

Note
The Windows Notepad can be used to create a text file.
The Notepad can be found in the Start menu under Programs->Accessories->Notepad.
The text file is transmitted with the HyperTerminal program, where you will find the menu item Send Text File under the menu Transfer.
You can then select a file and send the data to the bluepoint 4, where it is implemented.

Programming the function “ProcessFLOW-Control“ via the RS232

Programming the function “Process-FLOW-Control“ via the RS232

It is even quicker and easier to program function “ProcessFLOW-Control“ on the PC than on the device itself. Again, a text file must be created and is then transmitted to the bluepoint 4. The added advantage of this is that several program sequences can be administered on the PC and transmitted to the bluepoint 4 if required – enabling a program change to be effected in just a few seconds.

For each line in the program of the function “ProcessFLOW-Control“, a line with the following format is defined in the text file:

:PA*Line number Wait time* **;** Command *[Parameter]* ↵

:	to initialise processing of the command (ASCII 58 or 0x3A).
PA	Command for programming a text line
Line number	Line number of function “ProcessFLOW-Control“
Wait time	Waiting time before a command is executed (given in seconds)
;	Separator (ASCII 59 or 0x3B)
Command [Parameter]:	as described in chapter “RS232 commands “, page 65.
↵	Termination of line, CR (ASCII 13 or 0x0D)

Example of a text file for programming the function “ProcessFLOW-Control“:

Text file for programming the function “ProcessFLOW-Control“				
:PA01	0	;	LPON	
:PA02	0	;	SETP	100
:PA03	0	;	WLMP	
:PA04	10,0	;	WPLC	
:PA05	1,0	;	SOUT	1
:PA06	0	;	SETT	3,5
:PA07	0,5	;	SHOP	
:PA08	0	;	WSHC	
:PA09	0	;	SETT	10
:PA10	5,0	;	SHOP	
:PA11	0	;	WSHC	
:PA12	1,0	;	SOUT	0
:PA13	0	;	GOTO	04

Note
The Windows Notepad can be used to create a text file.
The Notepad can be found in the Start menu under Programs->Accessories->Notepad.
The text file is transmitted with the HyperTerminal program, where you will find the menu item Send Text File under the menu Transfer.
You can then select a file and send the data to the bluepoint 4, where it is implemented.

Note
There are further examples and tips on how to set up your own program sequences in the Appendix.

Calling up warnings, errors and device status via the RS232

Calling up warnings, errors and device status via the RS232

It is also possible to call up the current device status via the RS232. To do this, simply send the character “?“ (ASCII 63 or 0x3F) to the bluepoint. This is the only command that does not require a CR to enable it.
When the bluepoint 4 has received the ?, it sends back the current device status as a hexadecimal code in the following format:

? received: => bluepoint 4 sends back: => *ABCD EFGH IJ*

Each letter stands for a hexadecimal number, which can be decoded using the following table.

Posi-tion	hexadecimal code received																Status / Warning / Error
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	
A		X		X		X		X		X		X		X		X	General fault
			X	X			X	X			X	X			X	X	General warning
					X	X	X	X					X	X	X	X	Shutter is open
									X	X	X	X	X	X	X	X	Shutter is closed
B		X		X		X		X		X		X		X		X	Lamp is on
			X	X			X	X			X	X			X	X	Lamp is ready for operation
					X	X	X	X					X	X	X	X	Device is switched on
									X	X	X	X	X	X	X	X	Device in PLC mode
C		X		X		X		X		X		X		X		X	Dispensing completed (0.5 sec. set)
			X	X			X	X			X	X			X	X	Dosage in process
					x	x	x	x					x	x	x	X	Signal output
									x	x	x	x	x	x	x	x	Calibration/Readjustment
D																	not in use
E		X		X		X		X		X		X		X		X	Dosage unit error
			X	X			X	X			X	X			X	X	Warning Limit Number of dosages
					X	X	X	X					X	X	X	X	Warning Temperature
									X	X	X	X	X	X	X	X	Warning Intensity too low
F		X		X		X		X		X		X		X		X	Warning Intensity too high
			X	X			X	X			X	X			X	X	No light guide plugged in
					X	X	X	X					X	X	X	X	Error Reading UV Meter
									X	X	X	X	X	X	X	X	Error ProcessFLOW-Controller
G																	Not in use
H																	Not in use
I		X		X		X		X		X		X		X		X	Lamp error
			X	X			X	X			X	X			X	X	Shutter error
					X	X	X	X					X	X	X	X	Temperature error
J																	Not in use

Sending a Device Report via the RS232

Sending a Device Report via the RS232 – DRPT command:

The bluepoint 4 Device Report contains all settings and status information. The Device Report can be read as a status report and also helps the Hönle customer services department to quickly diagnose the cause of errors. On request, we can provide the exact specifications of the Device Report.

The Device Report is transmitted via the RS232 interface as a text file. A terminal program is used to do this (see Appendix). The DRPT command can either be sent directly via the RS232 or integrated in a ProcessFLOW-Control.

Note
Short delays in regular operation can occur during execution of the DRTP command, particularly when dispensing with very short dosage times. The DRTP command should therefore only be used where absolutely necessary.

Example of a Device Report:

```
drpt

******* HOENLE AG  -  DEVICE REPORT *******
   bluepoint 4 DS     SN: 04020001   V0.60

P:100     T:003.0   Q:000000  E:00000
D:0001    O:100.00  C:100.00  L:000
STATUS:0078    WARNING:0000   FAILURE:00
PMAX:00000   PMIN:00000   LAST:0000h00min
OPH-DEV:00000h05min  OPH-LAMP:00000h04min
DOS-ALL:000000000000   DOS-CNT:00000000
TEMP:024.63   TEMP-SET:42   PWM:080
IN-SPS:0  IN-LMP:2  IN-ERR:F
FKEY:04   FSPS:0002   FREL:0020
00.00.00   SHOP:00000000
01.01.00   00:04:12
```

10 Servicing, maintenance and cleaning

General information

General information

Servicing, maintenance and cleaning work must be carried out by authorised personnel only.

- When carrying out servicing, maintenance and cleaning work, ensure that no fingerprints are left on the lamp and the filter.
- Always work with a clean cloth or clean gloves.
- Only handle the UV lamp by its ceramic base.
- Where necessary, clean the lamp and the filter when they are cold, using a clean cloth and alcohol.

Note
Marks left on the UV lamp or the reflector (e.g. fingerprints) will be burnt on when the lamp is put into operation and reduce the service life and the performance of the UV lamp.

Maintenance

Maintenance

The following maintenance work must be carried out on the bluepoint 4:

Every day:

Check the light guide for damage and soiling of the outlet window. Where necessary, these parts must be cleaned, see , chapter “Cleaning the light guide”, page 80.

Danger

Before carrying out maintenance work, switch the equipment off and disconnect it from the mains. Danger of injury, possibly fatal!

Maintenance work must not be carried out while equipment is still warm.
After switching off, the bluepoint 4 must be left to cool down for at least 10 minutes with the ventilator running.
If the ventilator is switched off, it takes at least 30 minutes (at 20 °C ambient temperature) for the equipment to cool down.
Do not open the equipment during this cooling-off period. Acute danger of burns!

Replacing the UV lamp at bluepoint 4 and bluepoint 4 ds

Replacing the UV lamp at version bluepoint 4 and bluepoint 4 ds

The relative UV intensity of the lamp decreases the longer the lamp is in service.
If the required relative UV intensity does not suffice any longer, the lamp has to be replaced.

Note
A reduction in UV intensity means less efficient applications.

Warning
Use only original spare parts manufactured by the Dr. Hönle AG.
Safe operation of the bluepoint 4 cannot be guaranteed if parts from other manufacturers are used.

Note
To order spare parts, see chapter "Order data for equipment, spare parts and accessories", page 82.

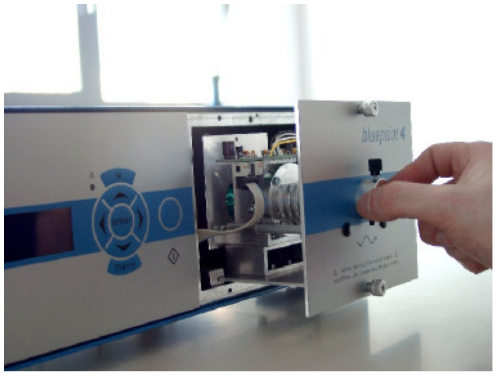
The lamp unit is pulled out to replace the UV lamp.

Danger

Before opening the equipment, switch it off and disconnect it from the mains.
Danger of injury, possibly fatal!

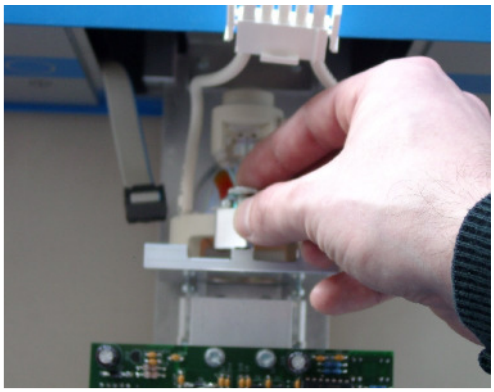
After switching off, the bluepoint 4 must be left to cool down for at least 10 minutes with the ventilator running.
If the ventilator is switched off, it takes at least 30 minutes (at 20 °C ambient temperature) for the equipment to cool down.
Do not open the equipment during this cooling-off period. Acute danger of burns!

-

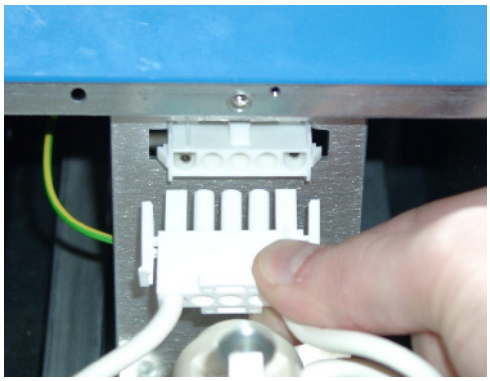


- Turn equipment off and disconnect from the mains.
- Wait at least 10 minutes for the device to cool down.
- Undo the screw connection of the slide-in lamp unit (20).
- Slowly pull out slide-in lamp unit approx. 9 cm.

- Detach ribbon cable.

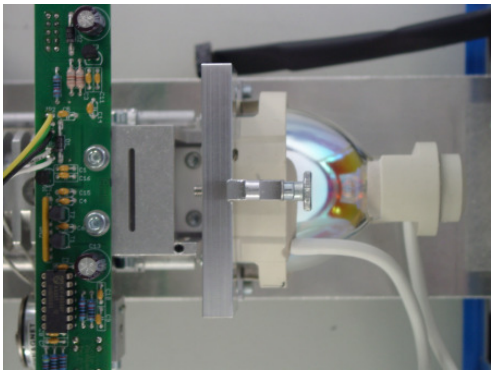


- Slide lamp unit out fully.
- Undo knurled screw.
- Turn lamp clip 180°, engage it and secure with the knurled screw.



- Press lateral securing flaps against the 5-pin plug and pull the plug off towards the front.
- Remove old lamp in an upward direction.

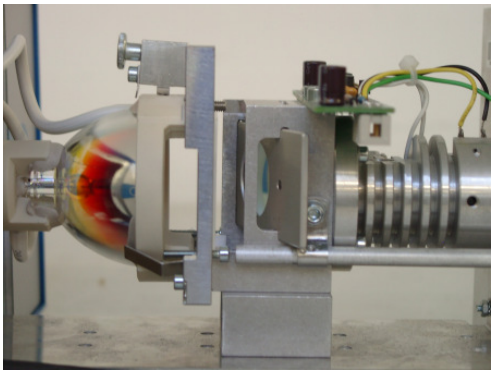
Danger
The lamp contains mercury!
Mercury vapour will be emitted if the lamp breaks while it is hot or during operation.
In such an event, personnel must leave the room immediately and the room must be adequately ventilated.
Subsequently, a competent person must collect the mercury residue using a suitable binding agent and dispose of appropriately.
Binding agent: Powdered copper or zinc or Protectasan
Firma Frankenbach,
D-61462 Königstein / Taunus
Tel.: ++49 (0)6174 / 3993

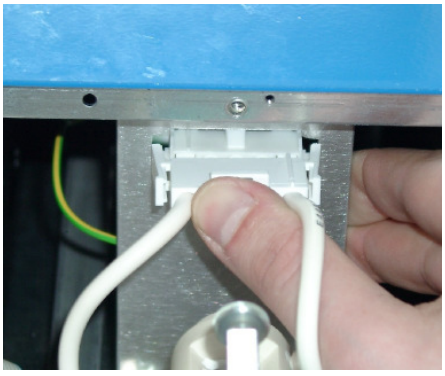


- Fit new lamp from above as shown in the illustration.

Caution

- The upper positioning screw fits into the upper slot of the lamp socket
- The reflector collar must rest on the 2 adjusting screws at the bottom.





- Turn lamp clip 180°, engage it and secure with the knurled screw.
- Insert 5-pole lamp plug until the side sections engage.

Note

The plug can only be inserted with the flat contact sides (see outside contacts) pointing upwards.

- Slide lamp unit in until it is extended approx. 9 cm.
- Plug in ribbon cable.
- Slide lamp unit in fully.
- Fully tighten the screw connection of the lamp unit (20) by hand.
- Reset lamp operating hours,
  see chapter “Resetting lamp operating hours“, page 78.
- Carry out calibration, see chapter “Calibration“, page 30.

Note

In the case of multiple light guides, intensity alignment must be carried out. (See chapter ”Adjusting the lamp“, page 79.)

Replacing the UV lamp at version bluepoint 4 UVC

The relative UV intensity of the lamp decreases the longer the lamp is in service.
If the required relative UV intensity does not suffice any longer, the lamp has to be replaced.

Note
A reduction in UV intensity means less efficient applications.

Warning
Use only original spare parts manufactured by the Dr. Hönle AG.
Safe operation of the bluepoint 4 cannot be guaranteed if parts from other manufacturers are used.

Note
To order spare parts, see chapter "Order data for equipment, spare parts and accessories", page 82.

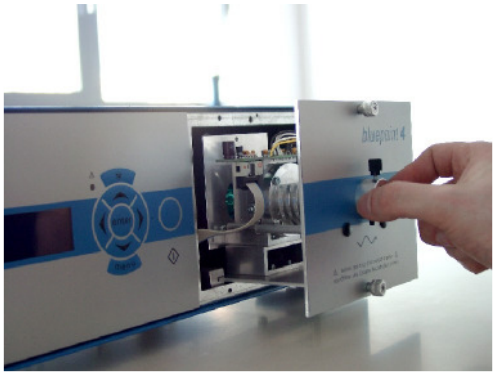
The lamp unit is pulled out to replace the UV lamp.

Danger

Before opening the equipment, switch it off and disconnect it from the mains.
Danger of injury, possibly fatal!

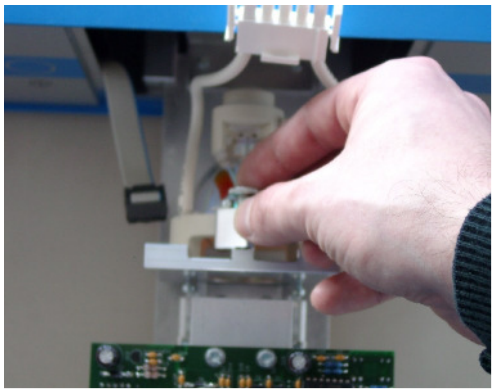
After switching off, the bluepoint 4 must be left to cool down for at least 10 minutes with the ventilator running.
If the ventilator is switched off, it takes at least 30 minutes (at 20 °C ambient temperature) for the equipment to cool down.
Do not open the equipment during this cooling-off period. Acute danger of burns!

-

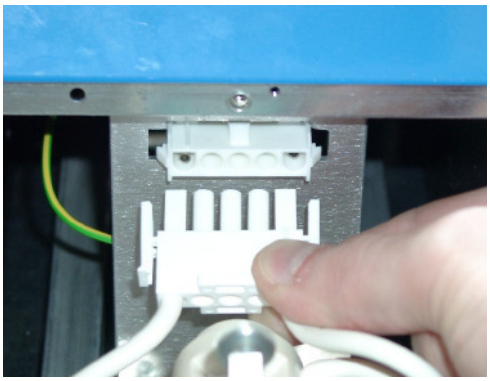


- Turn equipment off and disconnect from the mains.
- Wait at least 10 minutes for the device to cool down.
- Undo the screw connection of the slide-in lamp unit (20).
- Slowly pull out slide-in lamp unit approx. 9 cm.

- Detach ribbon cable.

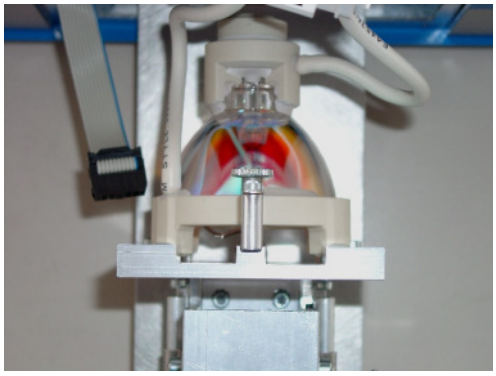


- Slide lamp unit out fully.
- Undo knurled screw.
- Turn lamp clip 180°, engage it and secure with the knurled screw.



- Press lateral securing flaps against the 5-pin plug and pull the plug off towards the front.
- Remove old lamp in an upward direction.

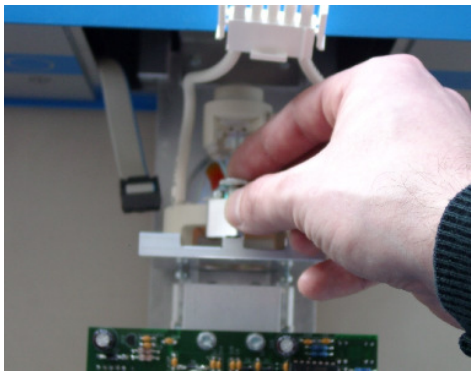
Danger
The lamp contains mercury!
Mercury vapour will be emitted if the lamp breaks while it is hot or during operation.
In such an event, personnel must leave the room immediately and the room must be adequately ventilated.
Subsequently, a competent person must collect the mercury residue using a suitable binding agent and dispose of appropriately.
Binding agent: Powdered copper or zinc or Protectasan
Firma Frankenbach,
D-61462 Königstein / Taunus
Tel.: ++49 (0)6174 / 3993

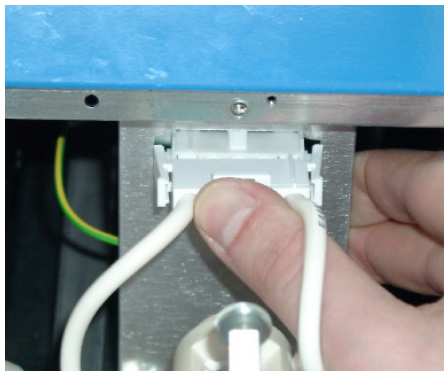


- Fit new lamp from above as shown in the illustration.

Caution

- The section in the reflector collar must correspond to the section in the lamp socket
- The reflector collar must rest on the 2 adjusting screws at the bottom.





- Turn lamp clip 180°, engage it and secure with the knurled screw.

- Insert 5-pole lamp plug until the side sections engage.

Note

The plug can only be inserted with the flat contact sides (see outside contacts) pointing upwards.

- Slide lamp unit in until it is extended approx. 9 cm.
- Plug in ribbon cable.
- Slide lamp unit in fully.
- Fully tighten the screw connection of the lamp unit (20) by hand.
- Reset lamp operating hours,
  see chapter “Resetting lamp operating hours“, page 78.
- Carry out calibration, see chapter “Calibration“, page 30.

Note

In the case of multiple light guides, intensity alignment must be carried out. (See chapter ”Adjusting the lamp“, page 79.)

Replacing the air filter

Replacing the air filter

A spare air filter is included with every spare lamp. The air filter should be replaced every time a lamp is replaced.

- Remove the air filter protective grid on the rear of the device
- Remove the spent air filter
- Insert new air filter
- Replace protective grid (grid engages in place)

Resetting lamp operating hours

Resetting lamp operating hours

Activity	Description	Display
Turn on main switch (2) on the back of the device.	Fan switches on Display lights up.	Time: 000,0 sec. % mW/cm2 mJ/cm2 080 094406 000000
Use the Arrow key (17) ▼ to move the cursor downwards.	Display jumps to the next section.	Operating-hours Temp lamp: device: °C 03217h 03356h 25.5
Press Enter key (16) and hold depressed for at least 3 seconds.	Cursor ▓ flashes at NO.	Reset lamp-hours ??? NO YES
Use arrow key (17) ► to position cursor on YES.	Cursor ▓ flashes at YES.	Reset lamp-hours ??? NO YES
Press Enter key (16).		Operating-hours Temp lamp: device: °C 00000h 03356h 25.5

The use of multiple light guides

The use of multiple light guides

As a rule, the UV intensities emitted by the individual arms of the multiple light guides will vary. This is due to the individual radiation characteristics of the lamps and the geometry of the double light guides.

To compensate for this, the light guide can be turned in its holder.

If this is not sufficient, the lamp must be readjusted, see next chapter “Adjusting the lamp”.

Adjusting the lamp

Adjusting the lamp

Note
When using multiple light guides, the UV intensities must be adjusted after each lamp replacement.

DANGER

Danger
Observe safety instructions in chapter “Danger caused by radiation“, page 13!

- Remove the blind plug from the readjustment aperture (22).
- Plug in multiple light guide and secure with setscrew (23).
- Turn device on at main switch (2) and lamp on at “Lamp on/off“ button (11).
- Set exposure time to max. 20 seconds.
- Wait for warming-up time to elapse.
- Insert first light guide arm into UV sensor.
- Open shutter with shutter key (19).
- Measure radiation intensity using UV meter.
- Measure radiation intensity of all light guide arms.
- Insert hexagon tool provided into an adjustment aperture (22).
- Carry out a quarter turn.
- The following adjustments are possible:

  Right aperture: Turn clockwise to move radiation focus towards bottom right,
  Turn anti-clockwise to move radiation focus towards top left,
  Left aperture: Turn clockwise to move radiation focus towards bottom left,
  Turn anti-clockwise to move radiation focus towards top right.

- Measure radiation intensity of each light guide arm.
- Continue readjustment depending on required degree of precision.
- Remove hexagon tool
- Replace blind plug in adjustment aperture (22).

Note
The UV intensities must be adjusted after each lamp or light guide replacement to ensure perfect alignment.

Cleaning

Cleaning

Note
Never use aggressive or abrasive cleaning agents.

Cleaning the light guide

Cleaning the light guide

The end of the light guide may become soiled if the equipment is operated in a dusty environment or because of adhesive fumes. This impairs the UV intensity.

- Clean the end of the light guide with a clean, lint-free cloth and alcohol or acetone.

Cleaning the surface of the equipment

Cleaning the surface of the equipment

Use only mild cleaning agents containing tensides (e.g. household cleaning agents), cleaning wipes or a damp sponge to clean the surface of the equipment . Never allow moisture to penetrate into the interior of the equipment.

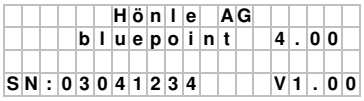
Software updates via Internet

Software updates via Internet

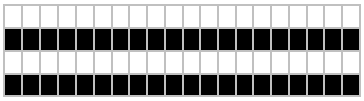
The bluepoint 4 is equipped with a FLASH program memory for the operating software. We recommend that you visit our homepage on the Internet at regular intervals to profit from future software improvements and upgrades. From our homepage, you can download the latest version of the operating software as required and update your bluepoint 4 software. A software update takes about 10 minutes and can be carried out by the user without adjustments to the software and without additional hardware, on a PC with Windows interface.

Carrying out a software update

- Turn the bluepoint 4 on at the main switch (2).

Description	Display
Shortly after the device is switched on, the current software version appears in the Start menu on the bottom right of the display.	

- Check on our Internet homepage, www.hoenle.de, whether a more recent version of the software is available.
- If so, download the update file.
- Open the file by doubleclicking on it.
- Switch the bluepoint 4 off.
- Connect the bluepoint 4 up to your PC using the 9-pin SUB-S cable provided. Use the COM1 port of your PC.

Activity	Description	Display
Turn the main switch (2) on the rear of the device back on while holding the * key (18) depressed.	The Display shows two bars.	
Keep the * key (18) pressed for a further 3 seconds.	The bluepoint 4 is in update mode.	

- Follow the instructions given in the update program on the PC.
- Wait until the update program has been completed.
- Using the main switch (2), switch the bluepoint 4 off and then on again.The update is complete.

Should a fault message be issued, repeat the process.
If a fault message is issued again, please contact the customer service department.

Note
Please observe the additional instructions on software updates given on our homepage. You will also find a list of all software updates and upgrades there.

Note
If you do not wish to carry out the software update yourself, please feel free to contact our customer service department (see chapter “Warning“, page 83 and chapter “Faults“, page 2.)

11 Order data for equipment, spare parts and accessories

Ordering

Ordering

Spare parts can be ordered from our spare parts service under the following address:

Dr. Hönle AG
UV-Technologie
Lochhamer Schlag 1
D-82166 Gräfelfing / München

Tel.: +49 (0)89 / 856 08-0
Fax: +49 (0)89 / 856 08-148

Equipment

Equipment

Description	Article / Order number
bluepoint 4 without light guide	31400
bluepoint 4 ds without light guide	31700
bluepoint 4 UVC without light guide	31500

Spare parts/ Accessories

Spare parts/Accessories

Description	Article / Order number
Light guide ø 8 mm / Length 1000 mm	1620
Light guide ø 8 mm / Length 1500 mm	0042
Light guide ø 5 mm / Length 1000 mm	8394
Light guide ø 5 mm / Length 1500 mm	0493
Further light guide lengths and light guide diameters	available on request
Multiple light guide	available on request
Foot-operated switch	1866
Spare lamp bluepoint 4	32427
Spare lamp bluepoint 4 uvc	32428
Fuse 5 x 20 mm 6.3 A inert (2x)	0545
6-pin diode plug for external input	1622
Shutter set bluepoint 4	36965
Filter 320-500nm bluepoint 4	32203
Filter 320 – 390nm bluepoint 4	32204
Filter 390- 500nm bluepoint 4	36478
Adapter f. PLC interface BP3 to BP4	32160
Protective goggles, tinted	0067
Protective goggles, clear glass	0068
Protective gloves	19754
User's manual (German/English)	32014

Warning
Use only original spare parts manufactured by the Dr. Hönle AG. Safe operation of the bluepoint 4 cannot be guaranteed if spare parts from other manufacturers are used.

12 Warning

General information

General information

The operating status Warning indicates that the device is not fully ready for operation or that there is a problem that needs to be remedied.
Warnings are displayed by means of the orange/red flashing LED. In addition, this signal can be assigned to the free PLC output or the potential-free alternating contact. (See chapter “Function of PLC output“, page 45 and chapter “3-pin socket alternating contact“, page 27.)
The following list contains all warning messages generated by the bluepoint 4, their causes and how to remedy the problem.
In the unlikely event of a warning message being generated where the problem cannot be remedied by following these instructions, please contact the customer service department of the Dr. Hönle AG. If possible, create a Device Report before doing so - see chapter “Sending a Device Report via the RS232 “, page 70.

Contact address:

Dr. Hönle AG
UV-Technologie
Lochhamer Schlag 1
D-82166 Gräfelfing / München

Tel.: +49 (0)89 / 856 08-0
Fax: +49 (0)89 / 856 08-148

Warning	Display	Cause	Remedial action
Light guide Shutter will not open.	Time: 000,0 sec. Lightguide ??? % mW/cm2 mJ/cm2 080 09406 000000	Light guide not inserted properly.	Insert light guide fully.
Temperature: Overheating if temperature continues to increase	Time: 000,0 sec. !TEMPERATURWARNING!! % mW/cm2 mJ/cm2 080 09406 000000	Temperature in device very high.	Clear ingoing and outgoing air apertures. Check filter mat.
Intensity: After execution of the function Readjust power.	Time: 000,0 sec. !INTENSITY WARNING! % mW/cm2 mJ/cm2 080 09406 000000	The bluepoint 4 can no longer adjust the intensity as required (intensity too high or too low).	Check process and adjust parameters. Adjust preset value. Fit new lamp.
No UV-Meter: After execution of the function Readjust power or the function Calibrate device.	Time: 000,0 sec. no UV-Meter!!! % mW/cm2 mJ/cm2 080 09406 000000	The UV meter has not transferred any valid readings.	Check UV meter and sensor. Check docking station. Check mains power supply for Docking station.

Warning	Display	Cause	Remedial action
Dosage. If dosage unit fitted.	Time: 000,0 sec. !!ERROR Dosage-Unit! % mW/cm2 mJ/cm2 080 09406 000000	Valve control reporting fault or not present.	Switch on control device. Check valve. If no control device is fitted, change menu Settings/Dosage unit.
Error Command, when ProcessFlow-Control or command via RS232	Time: 000,0 sec. !!ERROR COMAND!!! % mW/cm2 mJ/cm2 080 09406 000000	Command cannot be executed, e.g. Open shutter when no light guide is fitted.	Check command.
Limit dosages: If dosage unit is fitted.	Time: 000,0 sec. !! limit dosages !!! % mW/cm2 mJ/cm2 080 09406 000000	Threshold value for number of dosages has been exceeded.	Refill with adhesive and reset dosage counter.

Note
A warning does not necessarily mean that the lamp is switched off. It may be possible to carry on work – with some restrictions.

13 Faults

General information

General information

The fault mode indicates that the device is **not** ready for operation or that servicing work is due.
Faults are displayed via the red flashing status LED or via the PLC output 1 or (if set) via the potential-free adapter contact.

Should faults occur during operation of the Sujet4, obey the following instructions to locate the cause of the fault. Tips will also be given on how to remedy the fault.

If a fault occurs on your equipment and cannot be remedied by following these instructions, please contact the customer service department of the Dr. Hönle AG.

If possible, create a Device Report before doing so - see chapter “Sending a Device Report via the RS232 “, page 70.

Contact address:

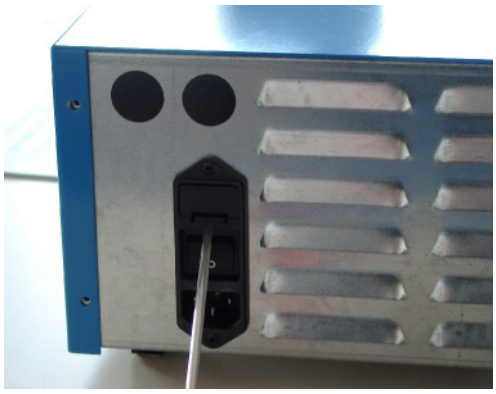
Dr. Hönle AG
UV-Technologie
Lochhamer Schlag 1
D-82166 Gräfelfing / München

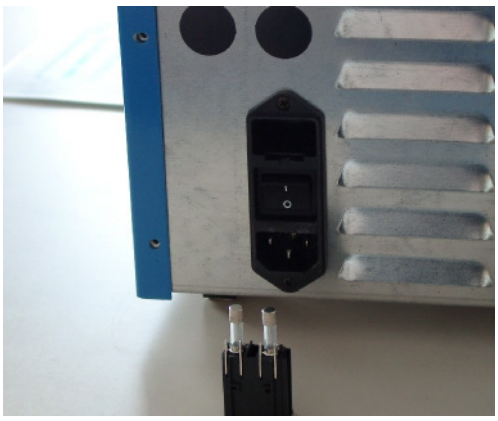
Tel.: +49 (0)89 / 856 08-0
Fax: +49 (0)89 / 856 08-148

No function

No function

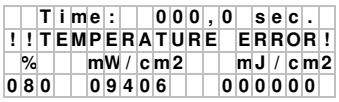
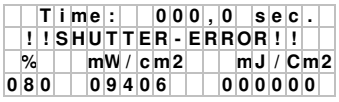
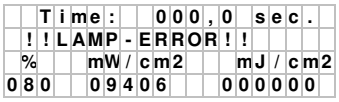
Warning	Display	Cause	Remedial action
Display dark, fan not working.		Device on stand-by, stand-by LED lit	Press any key.
		Device not connected to mains.	Check main switch, mains cable, mains fuse, equipment fuse (see illustration below).





Status LED lights up red

Status LED lights up red

Warning	Display	Cause	Remedial action
Overheating Lamp goes out.		Temperature inside device too high.	Clear ingoing and outgoing air apertures. clean or replace air filter, see chapter „Replacing the air filter“, page 78. check that fan is functioning correctly. Wait until equipment has cooled down again.
Shutter fault Lamp goes out.		Shutter jammed.	Disconnect the mains plug. Slide lamp unit out. Shutter must not catch anywhere. If necessary, readjust.
		Shutter defective.	Customer service
Lamp fault		Lamp does not ignite.	Wait until lamp has cooled down and ignite again.
		Lamp not fitted correctly or defective	Replace lamp, see chapter “Replacing the UV lamp“, page 72.
		EVG defective.	Customer service

14 Technical data

Measurements and weight

Measurements and weight

	Width [mm]	Depth [mm]	Height [mm]	Weight [kg]
Operating unit	450	300	150	bluepoint 4: 10 bluepoint 4 ds: 11.5

Electrical data

Electrical data

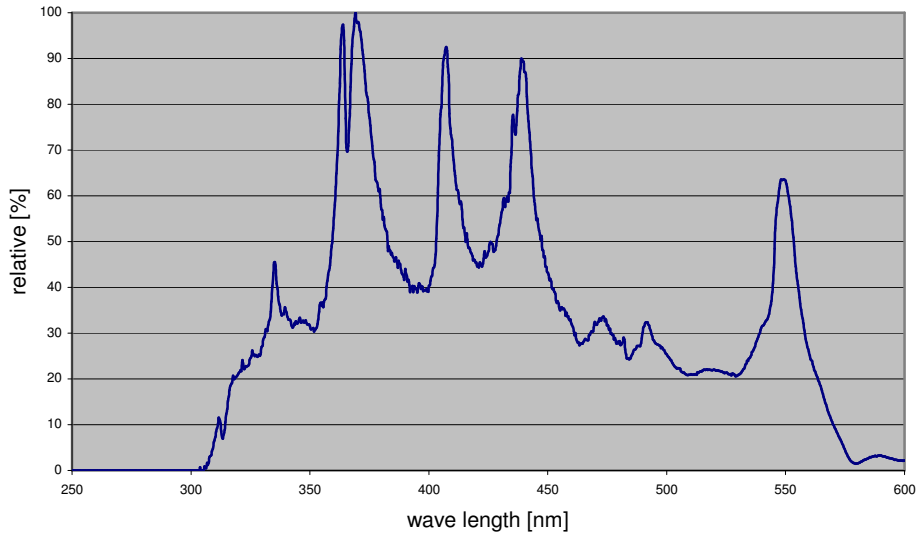
Input voltage range	90 – 264 V
Frequency range	47 – 60 Hz
Feed current	Max. 3,2 A
Fuse (Fine-wire fuse, 5 x 20 mm)	2 x 4,0 A (inert)

UV spectrum

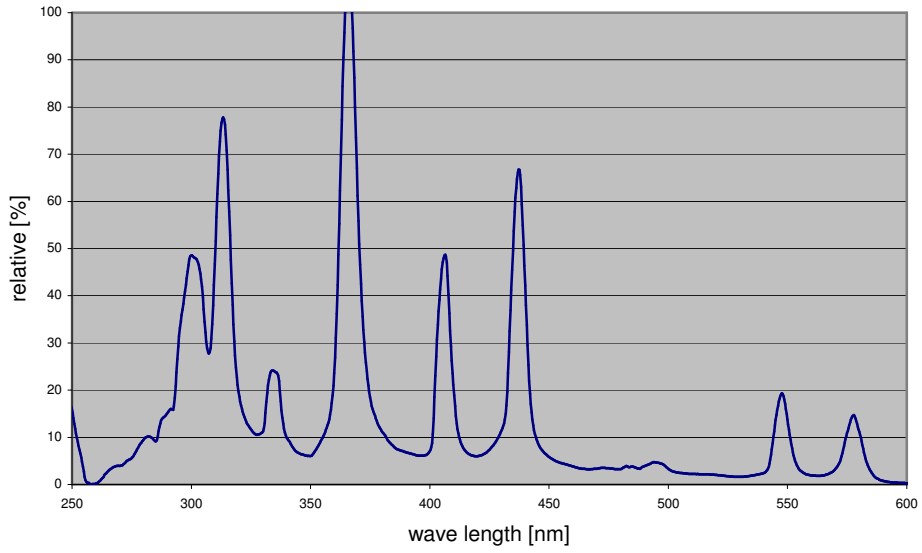
UV spectrum

The following diagrams show the radiation spectra emitted by the UV lamp.

Spektrum bluepoint 4



Spektrum bluepoint 4 UVC



Radiation technology

Radiation technology

Nominal value of the UVA radiation intensity of 330 – 400nm messured directly at the emitting surface of the light guide:	
- 8 mm diameter, 1 m length (extended)	10,000 mW/cm²
- 5 mm diameter, 1 m length (extended)	10,000 mW/cm²

Appendix

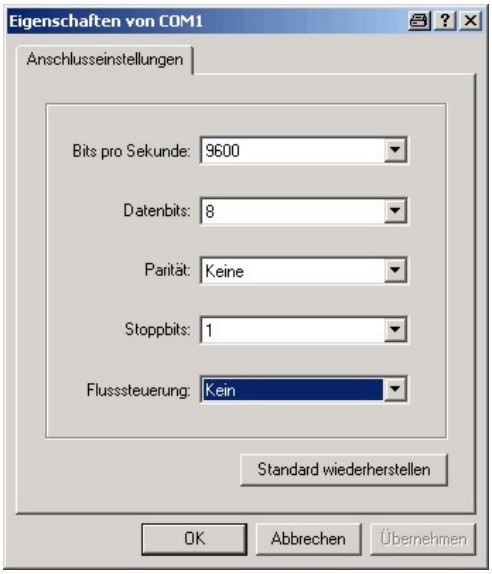
Configuration of the HyperTerminal program

The Hyper Terminal program should be used for transmitting configuration files or entire automatic program sequences (Function " ProcessFLOW-Control"). It is installed on every Windows PC, and can usually be found under Programs/Accessories/Communications/Hyper Terminal. On other Windows versions, it may be installed under a different directory. In the event of problems, please consult the Microsoft Windows Online Manual.

After starting the program, establish a new connection:

- Enter a suitable name in the „Name" window (e.g. BP4).
- Press OK.

- In the window "Connect to", enter the serial interface via which the bluepoint 4 is connected with the PC.
- Press OK.



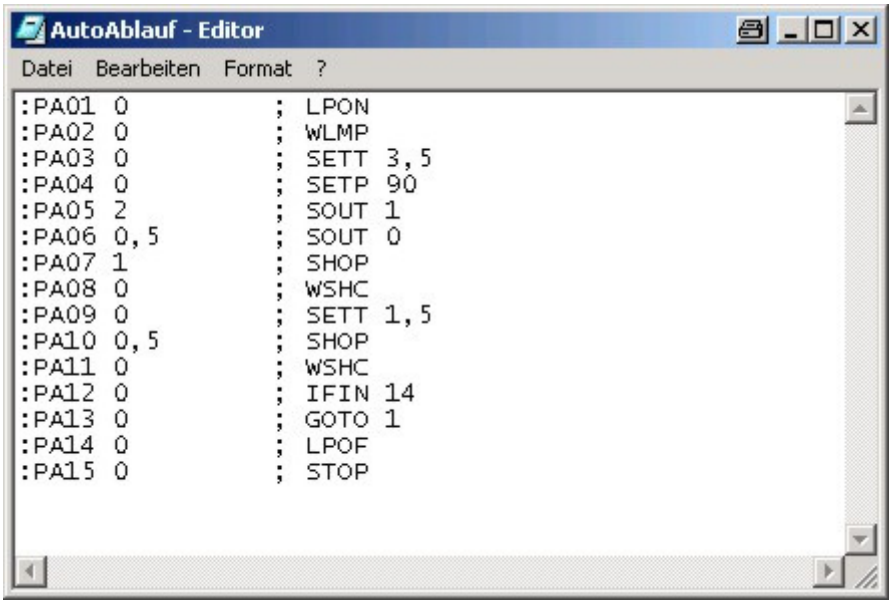
In the next window, define the connection settings for the serial interface.

- Set as shown in the illustration.

Creating and transmitting text files with HyperTerminal

Creating and transmitting text files with HyperTerminal

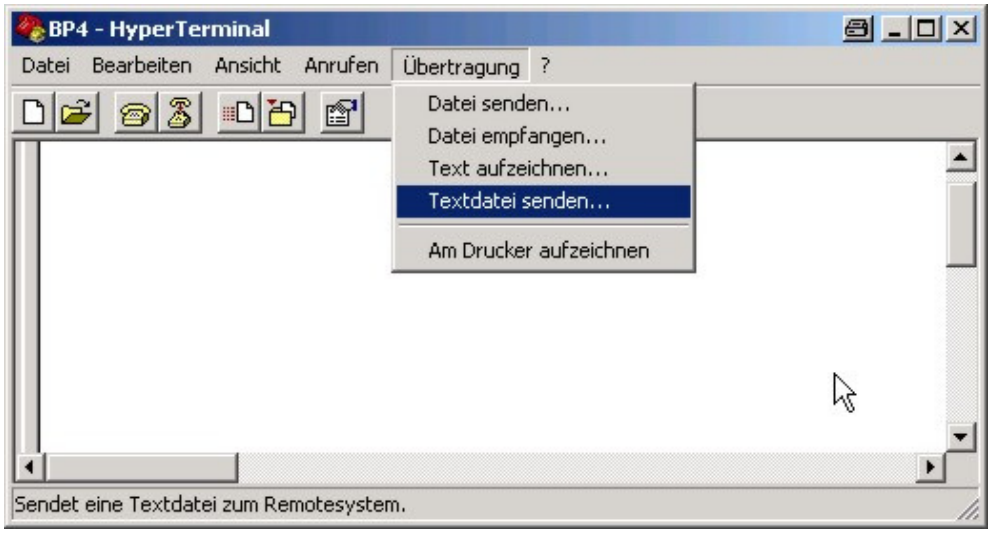
Text files must be created for programming automatic program sequences on the PC and in order to create configuration files. This is done using a text editor. In Windows, this is found under Start/Programs/Accessories/Notepad.


AutoAblauf - Editor
Datei Bearbeiten Format ?
:PA01 0 ; LPON
:PA02 0 ; WLMP
:PA03 0 ; SETT 3,5
:PA04 0 ; SETP 90
:PA05 2 ; SOUT 1
:PA06 0,5 ; SOUT 0
:PA07 1 ; SHOP
:PA08 0 ; WSHC
:PA09 0 ; SETT 1,5
:PA10 0,5 ; SHOP
:PA11 0 ; WSHC
:PA12 0 ; IFIN 14
:PA13 0 ; GOTO 1
:PA14 0 ; LPOF
:PA15 0 ; STOP

- Create program file.
- Save file.

Once it has been saved, the file can be sent to the bluepoint 4 via the HyperTerminal program.

To do this:
- Open the HyperTerminal program.
- Select the desired text file.
- Select menu Send.



- Select “Send Text file“.

The text file is sent to the bluepoint 4 via the RS232 interface.

Programming examples for automatic program sequences of function ”ProcessFLOW-Control“

Programming examples for automatic program sequences of function “ProcessFLOW-Control”

The examples show text files which are created on the PC and describe an automatic program sequence for the function “ProcessFLOW-Control“.
The files are sent to the bluepoint 4 via the HyperTerminal program.

Example 1: (Assembly workstation)

Example 1:

The bluepoint 4 is located at an assembly workstation.
- Press the * key (18) to switch the lamp on and set all parameters.
- As soon as the lamp is ready, an exposure process is initiated each time the foot-operated switch is pressed.
- After completion of the exposure process, the potential-free alternating contact is activated for 1 second in order to start up a conveyor belt.

:PA01	0	;	LPON		Line 1: Switch on lamp.
:PA02	0	;	SETP	80	Line 2: Electrical power output set to 80 %.
:PA03	0	;	WLMP		Line 3: Wait until lamp ready
:PA04	0	;	SETT	10,0	Line 4: Exposure time set to 10 seconds.
:PA05	0	;	WFSW		Line 5: Wait until foot-operated switch is pressed.
:PA06	0	;	SHOP		Line 6: Open shutter.
:PA07	0	;	WSHC		Line 7: Wait until shutter is closed again.
:PA08	0,5	;	SOUT	1	Line 8: Set output after waiting time of 0.5 secs.
:PA09	1,0	;	SOUT	0	Line 9: Reset output after waiting time of 1.0 sec.
:PA10	0	;	GOTO	05	Line 10: Repeat process from line 5.

- The function “Start ProcessFLOW“ must be assigned to the * key (18) in menu Settings. See chapter “Function of * Key“, page 46.
- The function “Signal output” must be assigned to the relay in menu Settings (See chapter “Function of Relais“, page 44.)

Example 2:

Example 2: (Program selection via PLC)

A bluepoint 4 device is being used to harden different bonding locations in an automatic production process.

- Exposure time: Bond point A = 3.5 seconds,
- Exposure time: Bond point B = 10 seconds
- The exposure time is to be selected via PLC.

:PA01	0,5	;	IFIN	04	Line 1-4: Conditional jump – If the PLC input Dispensing is set, Line 4 is executed; if not, Line 2 is executed.
:PA02	0	;	SETT	3,5	
:PA03	0	;	GOTO	05	
:PA04	0	;	SETT	10	
:PA05	0	;	SHOP		Line 5: Open shutter.
:PA06	0	;	WSHC		Line 6: Wait until shutter closed again.
:PA07	1,0	;	GOTO	07	Line 7: Endless loop

- The lamp is ignited via the 1st output of the PLC (Input Lamp On)
- ProcessFLOW-Controller is started via the 2nd output of the PLC (Input Run)
- Exposure time is selected via the 3rd output of the PLC (Input Dispensing)

Example 3:

Example 3: (Power readjustment via PLC)

The function Readjust power is to be started via the PLC as soon as the PLC has positioned the light guide above the sensor.
A Hönle UV-Meter is connected to the serial interface.

:PA01	0,5	;	PADJ	Line 1: Power readjustment is started, the bluepoint 4 opens the shutter for approx. 4 seconds and then transmits the UV-Meter readings.
:PA02	0	;	STOP	

- The lamp is ignited via the 1st output of the PLC (Input Lap On).
- The function “ProcessFLOW-Controller” is started via the 2nd output of the PLC (Input Run)
- The shutter is opened via the 3rd output of the PLC.

Danger
Observe the safety instructions “Danger caused by radiation“, page 13!

Example 4: (Several program sequences for different products in a list)

Example 4:

- Three completely different programs are required for three different products.
- It should be possible to alter the current program very quickly, directly via the control panel and without an additional PC.

:PA01 0 ; GOTO :PA02 *…to… Program for Product 1* :PA18 :PA19 0 ; STOP :PA20 *…to… Program for Product 2* :PA48 :PA49 0 ; STOP :PA50 *…to… Program for Product 3* :PA98 ; :PA99 0 ; STOP 05	It makes sense to divide the 99 lines into three sections and to assign each product its own section. There will then be a GOTO command in the first line of the program. This effects a jump to the first program line of the corresponding section. The operator can alter the jump address for the GOTO command very quickly, thus making it possible to make adjustments within just a few seconds.